

**EFFECTIVE REGULATION  
CASE STUDY:  
SINGAPORE  
2001**



International Telecommunication Union





**The Info-Communications Development Authority (IDA):  
A Case Study on Singapore’s “Converged”  
Regulatory Agency**

**Effective regulation**

**Case study: Singapore**



**International Telecommunication Union**

This case study was conducted by John Alden, Vice President, Freedom Technologies and Susan Schorr of the ITU/BDT.

The report is based on field research undertaken in Singapore from 30 April-4 May 2001, as well as reports and articles identified in footnotes. A list of persons and organizations met during the field research is contained in Annex A.

The field study enabled us to meet and interview the regulatory agency as well as government and industry. This study is concerned chiefly with institutional considerations, the structure, the operation, the financing and the legitimacy in the marketplace of the Info-Communications Development Authority of Singapore (IDA), the regulatory agency. This study is intended to be useful not only to the regulatory authorities and the corresponding arms of government, but also to everyone concerned with the telecommunication market.

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The views expressed are those of the authors and may not necessarily reflect the opinions of the ITU, its members, or the Government of Singapore.

This case study is one of five case studies on Effective Regulation. Additional information can be found on the web site of the BDT's Sector Reform Unit <http://www.itu.int/ITU-D/treg/>

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## 1 Introduction

### 1.1 Purpose of the Case Study

The reform of the information and communication technology (ICT) sector has fueled major changes at the regulatory and institutional levels. One of the most striking changes has been the rise of the ICT sector-specific regulatory agency. By the end of 2000, there were 102 such agencies operating separately from telecommunications service providers, and 52 of them operating separately from communications-related government ministries.<sup>1</sup> The number of telecommunications regulatory authorities is expected to increase to at least 120 by the end of 2001. Many of these agencies have been created only in the last five years. They mark a true departure from the way countries around the world approach economic regulation, in general, and the regulation of communications industries, specifically.

It is one thing for countries to make a policy decision to create an independent regulatory agency, and quite another to empower the agency to act independently and effectively. Regulatory agencies are not created in vacuums. Inevitably, they are the products of political, social, legal and economic conditions that exist at fixed points in time in each country. Nor are these conditions static; regulatory approaches and policies change, and agencies change with them. There is no textbook for government policy-makers to quote, chapter and verse, in establishing an independent regulatory agency that will achieve their national goals. Moreover, once regulators are named and take office, there is no blueprint – and often no national precedent – for how they should operate and regulate. Nevertheless, the means by which each country creates, structures and implements its regulatory body is one of the most important factors in the success of its reform process. Increasingly, then, newly appointed and responsible regulators are searching for models and best practices as guideposts for their own actions.

Because the International Telecommunication Union (ITU) is receiving a growing number of requests for “best practice” guidelines and

recommendations related to the establishment and operation of regulatory agencies, the Sector Reform Unit (SRU) of the ITU’s Telecommunication Development Bureau (BDT) decided to conduct a series of case studies on the topic of regulatory independence and effectiveness.

Singapore was selected as one of five SRU regulatory case studies to be conducted in 2001, for a number of compelling reasons.<sup>2</sup> In 1992, Singapore became one of the first countries worldwide to create a sector-specific telecommunications regulatory body, the Telecommunication Authority of Singapore (TAS). Singapore was also one of the first countries to create a regulatory body specifically to respond to the convergence of telecommunications and information technologies (computing). It did so in late 1999, through the merger of TAS with the country’s former National Computer Board (NCB), creating the Info-Communications Development Authority of Singapore (IDA). Since the short time that it was established, IDA has been lauded for developing a fair and impartial framework for competition – the Code of Practice for Competition in the Provision of Telecommunications Services (the Code) – based on the principles of technological neutrality and asymmetric regulation between dominant and non-dominant licensees. In addition, in a process balancing the need for public consultation with quick market entry, IDA approved a Reference Interconnection Offer that allows any licensee to establish fair terms and conditions for interconnection with the incumbent fixed-line operator. Together, the Code and RIO serve as valuable models for countries seeking to implement full competition.

In addition to Singapore’s role as a regulatory pioneer, it is a useful subject for a case study because of the nature of IDA’s mandate, which is a rare combination of regulatory duties and roles in promoting and developing the country’s communications capabilities and industries. IDA represents Singapore’s comprehensive effort not just to regulate ICT industries, but also to become an “info-communications hub”. Finally, Singapore’s governing political culture emphasizes a consensus-building approach that involves both public sector leadership and

<sup>1</sup> See International Telecommunication Union, *Trends in Telecommunication Reform, 2000-2001*, third edition, page 13.

<sup>2</sup> The other case studies are of Botswana, Brazil, Morocco and Peru.

private sector input in marshaling national resources and achieving national goals.

This case study examines how one country established its regulatory authority and examines how that authority's relations with other institutions and market players help determine its overall effectiveness. It views IDA within the context of the goals for regulation and development set by the government of Singapore, while applying the metrics of intra-governmental reporting and independence, transparency, staffing, and financing that have been identified as common issues for all regulators. It will also evaluate how effective IDA has been in transforming Singapore into an info-communications hub and its regulatory response to the phenomenon of convergence. The goal of the report is to provide best practice guidelines that may be used by regulators and policy makers in other countries to achieve their own objectives.

## 2 Singapore: Country Background

### 2.1 Overview



Situated at a strategically and economically important point astride the shipping lanes of the Singapore Strait, the Republic of Singapore has a long and proud tradition as a trading nation. Initially as a British colony and, since independence in 1965, Singapore has attracted a diverse, highly motivated and skilled workforce and population, resulting in an outward-looking and

polyglot worldview. Known for years as one of Asia's economic "tigers," Singapore is one of the most sophisticated and developed markets in the world. In keeping with that, Singapore has worked hard to develop itself as a high-technology pioneer, including in the communications sector. As the cultural and political inheritor of the title "Singa Pura" (Sanskrit for "Lion City"), the republic sees itself as a strong competitor in the drive to become a hub for East Asian telecommunications networks. This effort has been a national one, calling upon the resources of the government and the private sector to coordinate the development of the country's telecommunications and computing resources.

### 2.2 Geography

Singapore has a land area of only 660 square kilometers (about 255 square miles) and consists of a group of islands, dominated by a main island, on which is located the city of Singapore, the nation's major metropolitan agglomeration and capital. The country is located just off the southern tip of the Malay Peninsula and is linked to Malaysia, its northern neighbor, by a bridge across the Johore Strait. The closest island grouping of its southern neighbor, Indonesia is located just across the Singapore Strait. Singapore's strategic position, coupled with its relatively small size, has throughout its history given its population a heightened sense of the unique nature of the city state, as well as its isolation and vulnerability. Singapore is a trading and business hub reliant on good relations with its neighbors and trading partners for its economic success and political stability.

### 2.3 Demography

Singapore's population is 4.018 million, of which 2.97 million are citizens, 290,000 are permanent, resident non-nationals and over 754,000 are impermanent, non-resident aliens.<sup>3</sup> Singapore's population added 1 million people during the 1990s, an influx driven largely by incoming resident and non-resident aliens. Average annual population growth from 1990-2000 was 2.8%. The number of native Singapore citizens increased by only 1.3% during the 1990s.

<sup>3</sup> Source: Singapore Department of Statistics *Singapore Census of 2000* and Household Registration Database. <http://www.singstat.gov.sg>

Singapore has a rich heritage of ethnic and cultural diversity.<sup>4</sup> A core precept of government policy is equal treatment and acknowledgment of all cultural and ethnic backgrounds. Chinese (Mandarin), Malay, Tamil, and English are recognized as official languages, with English serving as the predominant idiom in business and government.<sup>5</sup> There are, however, some 20 other languages in use in Singapore – an astounding diversity in a country consisting largely of an island barely 60 kilometers across at its widest point.



Source: IDA.

## 2.4 Economy

With a small domestic market, few natural resources, and a strategic location in Southeast Asia, the development of Singapore's character as a trading nation was perhaps inevitable. It leads Southeast Asia in exports and import, per capita. It has a service-oriented economy and its gross domestic product (GDP) per capita ranks

<sup>4</sup> About 77% of the country is of Chinese descent, the result of several waves of immigration. The Malay population makes up about 14% of the country. Another 8% is composed of descendants of immigrants from the Indian subcontinent, many of them Tamils from southern India.

<sup>5</sup> Singapore Census of 2000, Literacy and Language, page 2.

eighth in the world, at USD 24,210.<sup>6</sup> Services constituted 66% of the economy in 1999, with manufacturing accounting for 26% and construction 8%. Total GDP was SGD 159 billion (approximately USD 88 billion) in 2000.<sup>7</sup>

In contrast to many other Asian countries, Singapore's economy continued to grow (if only slowly) during the Asian currency crisis of 1997-98.<sup>8</sup> In the economic slow-down that occurred in early 2001, the government lowered its predictions of growth for the year to between 3.5% and 5.5% annual growth for 2001, down from its earlier estimate of between 5 and 7%. Still, Singapore's GDP grew 4% during the first quarter of 2001, led by service sectors, which grew 5.2%.<sup>9</sup>

Singapore's government has an active role in planning and coordinating major aspects of economic life in the country. Government-linked companies accounted directly for 13% of GDP.<sup>10</sup> The government's active role has had a profound effect on the economy and on the society in general. Singapore is, in a sense, a corporatist city-state, with the government proactively working to ensure a favorable climate for business and technology development, through many and varied programs that touch nearly every aspect of life in the Republic. The willingness of the government to take direct equity stakes in companies, and to provide direct financial subsidies, is seen by Singaporeans as vital to provide an initial spark for industries that, due to the size of the country's domestic market, may not otherwise develop.

<sup>6</sup> Nevertheless, according to the United Nations Development Programme (UNDP) World Human Development Report (1999), Singapore is classified as a developing country.

<sup>7</sup> SGD 159 billion based on current market prices. Statistics from Singapore Department of Statistics, Latest Annual Indicators (last updated 7 April 2001) at <http://www.singstat.gov.sg/FACT/KEYIND/keyind.html>

<sup>8</sup> GDP growth slipped from 7.8% in 1997 to 0.3% in 1998, only to rebound to 5.4% in the following year. U.S. State Department, Bureau of East Asian and Pacific Affairs, Background Notes: Singapore, August 1999, [http://www.state.gov/www/background\\_notes/singapore\\_0899\\_bgn.html](http://www.state.gov/www/background_notes/singapore_0899_bgn.html)

<sup>9</sup> Ministry of Trade and Industry, *Press Release on Advance GDP Estimates for First Quarter 2001 and Revised 2001 Growth Forecast*, released April 10, 2001.

<sup>10</sup> Singapore Department of Statistics, notice of publication, "Contribution of Government-Linked Companies to Gross Domestic Product," March 2001.

## 2.5 Government and History

The site of Singapore has been settled off and on throughout history and was originally known as Temasek. Singapore's recent history dates back to 1819, when Thomas Stamford Raffles, a British national, established a trading post on the main island as an agent of the British East India Company. This initiated a period of rapid settlement by Chinese and Indian traders and laborers, as well as European (mostly British) colonists, augmenting the existing Malay population. Singapore became a British Crown Colony in 1867.

The British held elections for self-rule in 1959. The People's Action Party (PAP) won power, led by Lee Kuan Yew, who became the first Prime Minister of the State of Singapore. Lee pressed for a union with Malaya and in 1963, Singapore joined the Federation of Malaya, Sabah, and Sarawak to form Malaysia. The union with Malaysia, however, was short-lived, and Singapore declared its independence on 9 August 1965 as a parliamentary republic.<sup>11</sup> The PAP has held power continuously since then, with Lee serving as prime minister during most of the period; Goh Chok Tong became the country's second prime minister in 1990.

The chief of state is the president, elected for a four-year term. Since 1991, the president has had power over certain appointments, government budgetary affairs, and security issues. Most political power, however, lies with the prime minister and the cabinet, which head Singapore's government in the unicameral parliament.

Judicial power is vested in the High Court and the Court of Appeal. The High Court has original jurisdiction in serious criminal and civil cases, as well as appellate authority over cases from subordinate, local courts. The Court of Appeal hears cases on appeal from the High Court.

## 2.6 Human Development

While Singapore enjoys the eighth-highest per capita GDP in the world, it ranks only twenty-sixth on the United Nations Development

Programme's Human Development Index (HDI).<sup>12</sup> The HDI is a calculation based on a variety of factors, including wealth, health, education and quality of life. While Singapore ranks highly in terms of GDP per capita and life expectancy, its ranking is pulled down by a relatively poor performance in education, as viewed by the UN. For example, the adult literacy rate is 92.1%.<sup>13</sup> Both figures rank fairly low for industrialized nations, although Singapore does have the highest HDI in South-east Asia – and second only to Japan in Asia.

The Singaporean government has attempted to improve the country's educational performance over the past decade. According to Singapore's 2000 census, 57% of the resident population over age 15 had at least a secondary school education – a 15% increase over the 1990 figure. The percentage of university graduates reached 12% in 2000, up from 4.5% in 1990.<sup>14</sup>

Household income increased rapidly throughout most of the 1990s, averaging 6% growth annually during the period 1990-1995 and 7.5% growth from 1995-1997. Average household income actually declined 2.7% in 1999, in the aftermath of the Asian currency crisis, but it recovered to 5.4% growth in 2000.<sup>15</sup>

## 3 The Government's Role in Developing Singapore as an "Info-Communications" Hub

The government of Singapore has taken an active role in the development of the nation's ICT market. This active role includes the design

<sup>12</sup> See <http://www.undp.org/hdr2001/>

<sup>13</sup> Statistics Singapore data is slightly different, citing 93% literacy rate. <http://www.singstat.gov.sg/FACT/KEYIND/keyind.html>

<sup>14</sup> Singapore Department of Statistics, *Census of Population 2000, Changing Education Profile*, page 1.

<sup>15</sup> Singapore Department of Statistics, *Census of Population 2000, Household Income Growth and Distribution*, page 1.

<sup>11</sup> U.S. Department of State, Bureau of East Asian and Pacific Affairs, *Background Notes, Singapore*, August 1999. See [http://www.state.gov/www/background\\_notes/singapore\\_0899\\_bgn.html](http://www.state.gov/www/background_notes/singapore_0899_bgn.html)

and implementation of a visionary and comprehensive policy aimed at securing Singapore's place as a regional ICT hub. In addition, the government holds indirect equity stakes in major ICT market players and provides grants and subsidies to companies engaging in telecommunication innovation or pioneering new technologies or services.

### 3.1 Singapore's Vision of "Info-Communications"

The government of Singapore has adopted the term *info-communications* to convey the concept of computers, content, and transmission as a converging whole. Info-communications is the banner under which Singapore plans to build the country's digital future.

The Singaporean government is not content merely to foster development of the info-communications market. Rather, it wants Singapore to be a regional hub for a variety of interrelated and complementary info-communications industries, believing that taking a leadership role in this sector will serve as a multiplier for the economy as a whole. In an effort to attract foreign investment, Singapore recognizes that multinational corporations will gravitate to locations where they can benefit from sophisticated communications technologies and a trained labor force to support them. It believes that local businesses will also benefit from an integrated package that enables them to find, generate, process, and send information in an efficient and seamless way.

Singapore is now implementing its InfoComm 21 Masterplan, a government policy initiative that is designed to transform the country into "a thriving and prosperous Internet economy by 2010."<sup>16</sup> The initiative – much of which will be coordinated and implemented by IDA – is something of a conceptual umbrella for Singapore's planned approach to industrial development in

this sector.<sup>17</sup> Major pillars of the plan include implementing and fostering competition in Singapore's telecommunications services market, developing information technology training and educational competencies, and making the Internet an integral part of the nation's industry and society.

The structural components (mostly working units within IDA) that have been put in place to pursue the government's goals are discussed in more detail in Section 7, although a full discussion of programs related to InfoComm 21 is beyond the scope of this case study. What is important to note about the initiative is that it illustrates several hallmarks of the government's approach to ICT issues:

- Government can and should act as a catalyst of market change and growth;
- Private sector and public sector forces can work in tandem to achieve goals;
- Singapore must attempt to be competitive in most, if not all ICT industries;
- Industry regulation is just one tool, among several, that government can use to establish market conditions conducive to growth and competitiveness.

### 3.2 The Hub Concept: From Traffic Transmission to Content and Software

Ultimately, the government aims to turn Singapore into an "info-communications hub" for the Asia-Pacific region. The term *hub* is used partly in a traditional sense – establishing a competitive market for international services that results in investments to build and operate international transmission facilities between Singapore and all major markets in the region.

But the hub concept also includes building links with other countries to foster economic growth

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<sup>16</sup> Mr Yeo Cheow Tong, Minister for Communications and Information Technology, "Strategies To Develop Singapore into an InfoComm Hub," speech delivered April 5, 2000, at the opening of COMDEX Asia 2000.

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<sup>17</sup> IDA's website defines InfoComm 21 as: "IDA's blueprint for harnessing information communication technologies for national competitiveness and improving our quality of life. The blueprint articulates the vision, goal and strategies that would facilitate the development of our infocomm industry over the next five years, and move Singapore into the ranks of 'first world economies' of the Net age."

up and down the communications network “value chain.” Singapore wants to provide the high-value inputs, such as software design and multimedia content, that will go into products and services to be delivered around the region. For example, Singapore plans to take advantage of its ethnic and commercial ties to China and India by providing content – translated and digitized in multilingual Singapore – for delivery over the Internet and IP-based networks in those large potential markets.

Singapore recognizes that not all info-communications industries will be present in Singapore itself – indeed, the market may determine that manufacturing of items like handsets can be done more cost-effectively in markets with lower labor and real estate costs – but Singapore seeks to be the nerve center, the center for management expertise, technological development, and intellectual property.

### 3.3 Singapore, Inc: Government Investments

These latest initiatives to build and promote Singapore’s industry are in keeping with past government policy. Since the founding of the country in the early 1960s, the government has continued to provide the catalyst of initial capital investment to spark and nourish critical industries. This policy, which has earned the government the moniker of “Singapore, Inc.,” is based on the concern that the relatively small size of Singapore’s domestic market might not provide sufficient market-based incentives for growth of healthy industries.

The government provides direct financial support, predominantly through two methods: the holding of indirect equity stakes – often amounting to controlling interests – in domestic operators; and the provision of grants and subsidies for companies engaging in telecom innovation or pioneering new technologies or services. Since 1974, the government has utilized a holding company to channel its capital investments into the Singapore economy. Temasek Holdings Ltd., which is wholly owned by the government, has substantial holdings in most economic sectors, including transportation, energy, banking, shipping, diversified energy,

real estate, and communications. Altogether, the government, through Temasek, holds some SGD 70 billion in assets.<sup>18</sup>

Through equity stakes and control of most of Singapore’s major communications-related conglomerates – Media Corp., Singapore Technologies, SembCorp., and Keppel Group – Temasek Holdings retains significant, often controlling, equity stakes in each of Singapore’s major domestic telecommunications operators (see Figure 3.1). Temasek owns more than 75% of incumbent operator Singapore Telecommunications (SingTel) directly. Through Media Corp. and Singapore Technologies, it controls more than 70% of exclusive cable television operator Singapore Cable Vision (SCV) and, through Singapore Technologies, it also controls StarHub Communications, the country’s second fixed-line and third mobile operator.<sup>19</sup> Through SembCorp. and Media Corp., it owns more than 50% of Pacific Internet, a dial-up ISP, and through Keppel, it owns 35% of Mobile One (M1), Singapore’s first competitive mobile network operator.

The government’s stated aim is to invest strategically, but to not hold equity beyond the point when the enterprise becomes self-sustaining. The goal of strategic disengagement has not always been easy to achieve. The government’s continuing investment in SingTel, for example, has raised questions in foreign markets concerning investments by the incumbent operator.

In addition to these government holdings, IDA, as explored below, has a budget of roughly SGD 600 million from Parliament to fund various grant and incentive programs to the private sector. Perhaps the best example of how Singapore’s government has supported info-communications is found in the creation of Singapore ONE (One Network for Everyone). Singapore ONE was born during the late 1990s as part of the National Computer Board (NCB) “IT2000” master plan for enhancing Singapore’s information technology and broadband infra-

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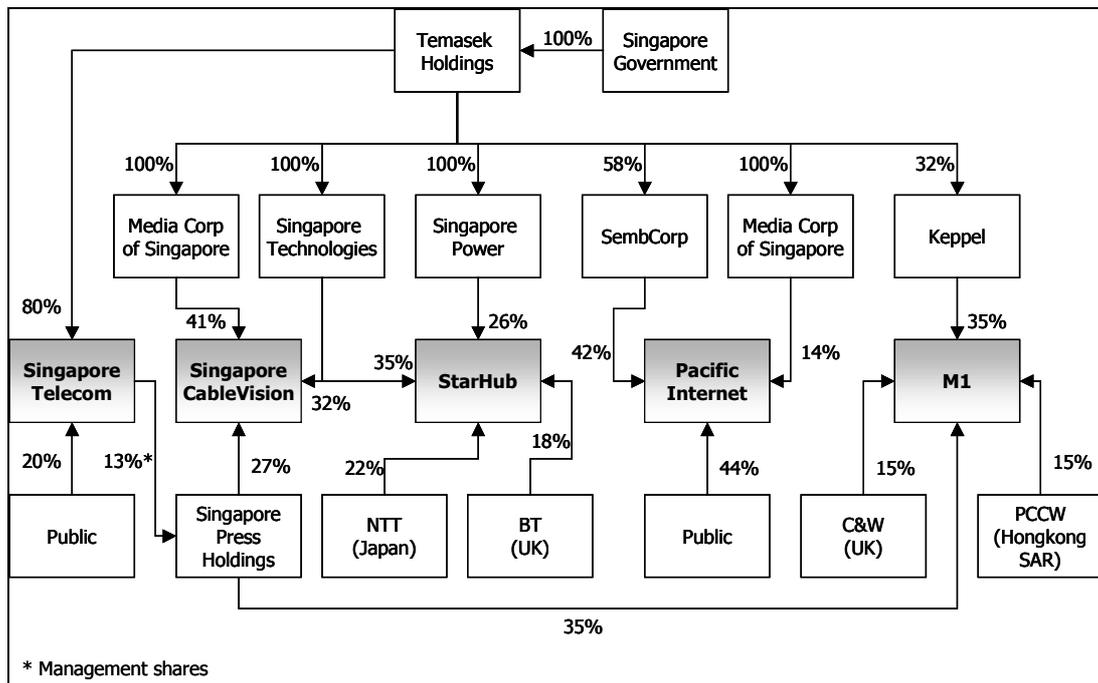
<sup>18</sup> see <http://www.temasekholdings.com.sg/group.html>.

<sup>19</sup> At the time this case study was being prepared, SCV and StarHub had announced plans to merge. See Box 4.3.

structure.<sup>20</sup> Singapore ONE consists of a broadband, ATM-based “core network” (known as 1-Net) that provides multimedia content and applications to homes and businesses at transmission speeds of up to 622 Mbit/s per second, and a comprehensive development program to promote connection and use of the

network, including electronic commerce applications. Singapore ONE is now accessible by more than 99% of homes, all schools, and numerous public libraries and community centers through the networks of SingTel and SCV. The project was established and funded by the government with industry participation.<sup>21</sup>

Figure 3.1 – Government Ownership of the Singaporean Telecom Industry



Source: ITU/BDT “The e-City: Singapore Internet Case Study”, April 2001, compiled from company reports.

<sup>20</sup> IT2000 was a conceptual forerunner of the Infocomm21 initiative, which concerned information technology applications.

<sup>21</sup> TAS (later IDA) was one of the initial members of the consortium, 1-Net Singapore Pte Ltd, which owned the network. IDA held its equity interest through a wholly owned subsidiary, Singapore Communications Investments Pte Ltd., which initially owned 40% of 1-Net. SingTel and SCV split the remaining 60%. Subsequently, the IDA subsidiary divested 30% of 1-Net’s equity to Pacific Internet and CyberWay (later purchased by StarHub). On September 27, 2000, moreover, IDA announced the sale of 1-Net to Media Corp., the nation’s largest broadcaster (and itself a government-linked company). IDA is now out of the broadband infrastructure market.

## 4 Sector Reform Overview

### 4.1 The Acceleration of Liberalization and Creation Of ICT Regulatory Bodies

Singapore has undergone three distinct phases of sector reform. In 1992, Singapore Telecommunications (SingTel) was corporatized and spun off from the Telecommunications Authority of Singapore (TAS), which until then had served as both the operator and the regulator.<sup>22</sup>

At the same time, TAS was reconstituted as a separate regulatory body, in essence placing Singapore in the vanguard of countries that created independent regulatory agencies in the early 1990s. During the mid to late 1990s, TAS was the agency that implemented the gradual,

phased introduction of competition, through the licensing of services that were progressively liberalized.

TAS was not, however, the only major governmental actor with an impact on communications technologies. Increasingly, the National Computer Board's (NCB's) work was at the frontiers of high-technology industrial policy, where it frequently crossed tracks with other Singapore government agencies, including the promotional arm of TAS and the Singapore Economic Development Board ("EDB"), whose more generalized promotional and development activities also included information technologies. Unlike most other independent regulatory agencies created during the early 1990s, the mandate of TAS included not merely regulation, but also the promotion of the telecommunications industry in Singapore.

#### Box 4.1: TAS: Singapore's First Telecom Regulator

##### Significant Dates:

- 1954: Creation of the Singapore Telephone Board, a corporation established under the Singapore Telephone Board Ordinance to improve telephone service and eliminate a long waiting list for service provision. The board's Telecommunication Department is responsible for providing international services.
- 1972: The Telecommunication Department is converted into a statutory board and renamed, giving birth to TAS.
- 1974: TAS and the Telephone Board are re-merged into a single entity under the TAS name.
- 1982: Postal services are combined with telecommunications services within TAS; its functions include provision of telephone and postal service and policy-making in one single government agency.
- 1992: TAS is reconstituted as a separate, independent agency under the Telecommunication Authority of Singapore Act; postal and telecommunications operations are spun off into corporate entities: Singapore Telecommunications (SingTel) and its subsidiary, Singapore Post.<sup>23</sup>
- 30 November 1999: The Telecommunication Authority of Singapore Act is repealed; TAS merges with the National Computer Board to form IDA.

##### Functions:

In addition to regulating SingTel, and later other licensees, the major functions of TAS included ensuring consumer welfare, stimulating competition and placing competition safeguards, promoting and developing the telecommunications industry, including implementing programs designed to stimulate network construction and modernization. The promotional arm of TAS was smaller than its regulatory arm but played an important role integral to the agency's overall mission.

<sup>22</sup> See Box 4.1 for a more detailed discussion of the history of TAS.

<sup>23</sup> There were continuing informal, but significant, professional and personal links between executives at SingTel and officials at TAS following 1992. It took about two years for TAS to achieve operational independence from SingTel; as newer staff members joined the government agency, ties with the operator became increasingly attenuated and less important in regulatory decision-making.

### Box 4.2: The Role of the National Computer Board

The National Computer Board (NCB) was created under the National Computer Board Act to promote and develop information technology in Singapore. On 30 November 1999, the National Computer Board Act was repealed and NCB was merged with TAS to form IDA.

NCB Mandate and Functions:

- To create an “intelligent island” through the pervasive development, build-out, and use of computing and information technologies.
- To develop the computer literacy of all Singapore residents and businesses such that they incorporate information technologies into their everyday business and leisure activities.
- To implement the IT2000 program.
- To create an information technology “culture” in Singapore, making it easier to generate trained professionals that could be incorporated into the country’s high-technology workforce.
- To train skilled IT professionals for corporations and small businesses in Singapore,<sup>24</sup> including an IT educational “master plan;” programs for online education and “distance learning” training programs; enlisting industry support for training programs and forming partnerships with local schools and universities.

During the early to mid 1990’s, SingTel was operating under a license that included exclusive rights to provide public basic domestic and international telecom services until 31 March 2007. SingTel was also authorized to provide mobile cellular services. Although SingTel enjoyed a monopoly in fixed-line services, by the end of the initial phase of sector reform, the government had acted to introduce competition in the mobile cellular sector. In May 1995, Mobile One (M1) was granted the country’s second mobile license – although M1 did not actually launch its service until two years later, in April 1997.

As the pace of liberalization in global telecommunications markets accelerated during the mid-to-late 1990s, however, Singapore felt pressure to keep pace with other East Asian states. In April 1996, the government kicked off a second phase of liberalization, announcing that it would accelerate the start of full competition in the telecommunications sector to April 2002. Meanwhile, Singapore would cut short SingTel’s exclusivity period by seven years, to 1 April 2000, allowing a measure of limited

competition by licensing up to two additional fixed-line licensees.

In 1998, however, the government issued just one additional fixed-line license, opting to implement a fixed-line duopoly during the period from April 2000 through April 2002. It awarded the second fixed-line license – and a third cellular service license – to a new market entrant, StarHub Communications. StarHub was authorized to begin both services effective 1 April 2000.<sup>25</sup>

Before StarHub could even enter the market, however, Singapore had already – and somewhat unexpectedly – embarked on the third and current phase of liberalization. In January 2000, Singapore’s government abruptly changed course away from its duopoly policy, accelerating the date for full competition from 1 April 2002 to 1 April 2000. On that date, Singapore allowed competition in all telecommunications markets. For example, the country’s exclusive cable operator, Singapore Cable Vision, was now free to offer voice

<sup>24</sup> By the late 1990s, Singapore’s government had realized that the country would need an additional 35,000 IT professionals to keep up with labor demands. Australian National Office for the Information Economy, *International IT&T Skills Situation and Government Responses – Background Paper*, April 29, 1999. [http://www.noie.gov.au/projects/ecommerce/skills/paper/internat\\_backgrnd\\_99.htm#SINGAPORE](http://www.noie.gov.au/projects/ecommerce/skills/paper/internat_backgrnd_99.htm#SINGAPORE).

<sup>25</sup> Although the government had also planned to award a third cellular mobile service license to a group dubbed P2P, the government backed away from this plan when it ruled that P2P had failed to form a consortium as it had outlined in its tender and thus failed to meet the licensing qualifications.

services. The government also lifted limits on direct and indirect foreign equity investment in Singaporean carriers. Up until that time, the government had limited foreign ownership to 49% direct ownership, or a combination of up to 74% direct and indirect ownership.

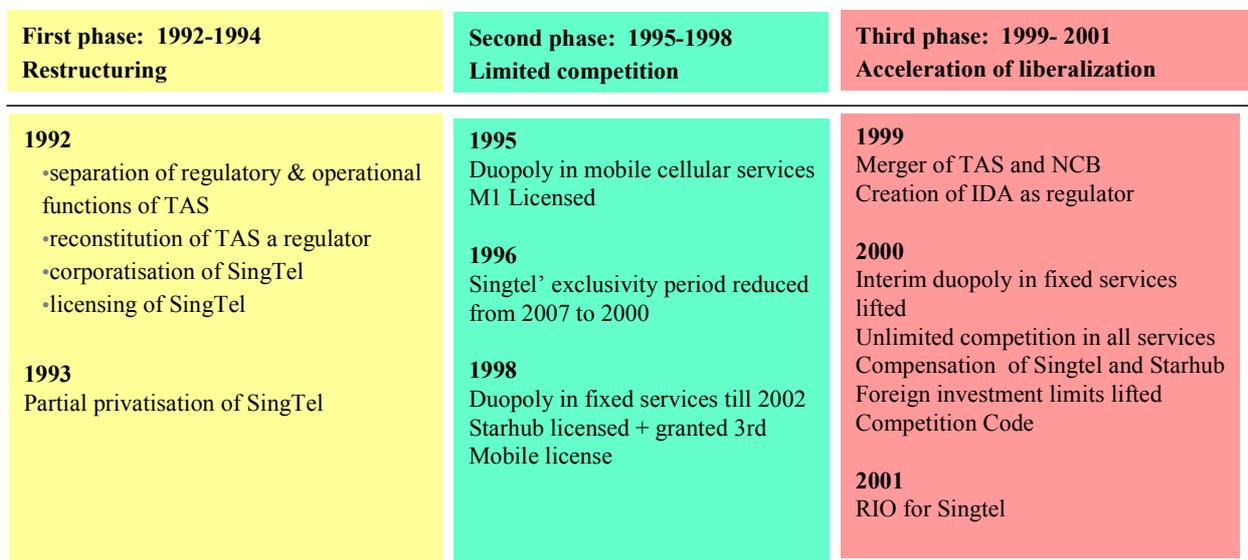
Both SingTel and StarHub were compensated for the loss of their exclusive and duopoly guarantees in their service licenses. StarHub was compensated SGD 1.082 billion. SingTel was compensated SD 1.5 billion in 1997 and SGD 859 million in 2000.<sup>26</sup>

It is clear that one impetus for accelerating liberalization was the perception that Singapore risked falling behind its rivals, such as Hong Kong, that already had moved forward with full liberalization. In its effort to become the regional info-communications hub, Singapore was reluctant to be seen as protecting its telecommunications market while other countries proceeded to open theirs. In November 1999, officials in what was soon to become the IDA joined with representatives of Singapore’s Economic Development Board on a fact-finding mission to the

United States to evaluate the U.S. market and determine whether a U.S.-based model of open competition would work in Singapore. Less than two months later, the decision had been made to proceed with full liberalization in the short term.

At the same time that the government was moving to open its markets, a number of different government agencies – including TAS, NCB, the Economic Development Board and even, occasionally, the Singapore Broadcasting Authority – developed overlapping responsibilities with regard to information and telecommunications regulation, promotion and development, resulting in the duplication of resources and effort. As a result of a Parliamentary proposal, legislation was therefore tabled to create a single, focused agency that would combine all government promotional and regulatory efforts involving the converging communications industries. It was at this time that the government introduced the term “info-communications” into the official vocabulary.

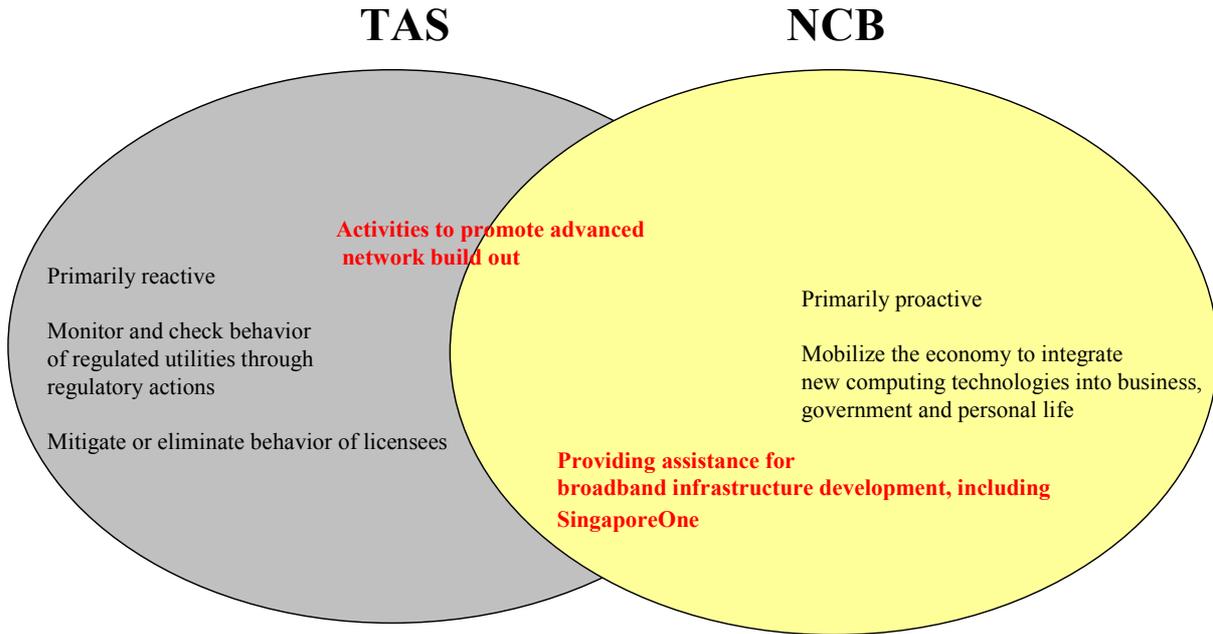
Figure 4.1 – Singapore’s telecommunication sector reform process



Source: Adapted from IDA.

<sup>26</sup> A portion of the first payment is currently in contention. See Section 10.2.2 below.

Figure 4.2 – TAS and NCB activities



Source: Adapted from TAS and NCB.

The Info-Communications Development Authority of Singapore Act of 1999 officially disbanded TAS and the NCB, creating one new statutory board, the Info-Communications Development Authority (IDA).<sup>27</sup> IDA was legally formed on 1 December 1999.

Among IDA’s first tasks was to implement the introduction of full telecommunications competition beginning on 1 April 2000. In the year following that date, IDA proceeded on several fronts to enable competition to take hold, by licensing new carriers, establishing a regulatory framework for interconnection and competition

through the drafting of a regulatory “code of practice,”<sup>28</sup> and requiring SingTel to file a “reference interconnection offer” (RIO) to serve as a blueprint agreement for operators seeking to interconnect with the incumbent.<sup>29</sup> IDA also accelerated its promotional activities during this period.<sup>30</sup>

#### 4.2 Major Players in the Telecommunications Market

As of 16 April 2001, a year after full telecommunications competition was introduced, 29 facilities-based operators (“FBOs”) were licensed in Singapore (See Figure 4.2). In addition, there were a total of 535 “service-based” operators or “SBOs” (including resellers) licensed to provide services in a wide array of

<sup>27</sup> Originally, the proposal to create a merged agency would have included SBA, as a reflection of the determination that multimedia services, including audio and video content, would be delivered via converged platforms such as the Internet or other packet-switched networks. But SBA retained its status as a separate agency, largely because its defenders argued that it had a unique function, as a content regulator, that was not shared with any of the other agencies, which were concerned with content-neutral issues of network build-out and operation. Because of prevailing social norms in Singapore, the regulation of pornography and racial “hate” content remained a politically sensitive issue, and there was insufficient support within the government to complete SBA’s merger with other communications-related industries.

<sup>28</sup> See Section 6.2 and 6.3 for a more detailed discussion of the *Code of Practice for Competition in the Provision of Telecommunications Services*.

<sup>29</sup> See Section 6.3.4 for a more detailed discussion of the Reference Interconnection Offer.

<sup>30</sup> Although IDA’s mandate also includes the regulation of postal services, specifically the conveyance of letters and postcards, postal regulation is beyond the scope of this study.

categories. The latter included “international simple resale” (ISR) operators (56 total), public Internet access service providers (40) and “Internet-based voice and/or data services” providers (81).

Many of the SBOs appeared to be no more than hotels or other institutions authorized to resell the services of actual carriers. However, the listings of both SBOs and FBOs included subsidiaries of many foreign international carriers.

Although many new operators have been licensed following the introduction of full competition, Singapore’s telecommunications market remains dominated by SingTel, StarHub, M1 and SCV, each of which is controlled by a government holding company.<sup>31</sup> These four are soon to be whittled down to three; StarHub and SCV have agreed to merge, following the approval by IDA, the SBA and the companies’ shareholders.<sup>32</sup>

### Box 4.3: Singapore’s Major Facilities Based Operators

**Singapore Telecommunications Ltd (SingTel).** The nation’s largest and incumbent carrier was partially privatized in 1993, but the government continues to own more than 75% of the company, through Temasek Holdings. In addition to its competitive telecommunications activities (including Internet access, mobile and fixed telephony, private data network services, and directory publishing), SingTel also continues to provide postal services. SingTel is a major foreign investor in its own right, with some USD 2.5 billion invested in 19 countries. During the summer of 2001, SingTel completed a deal to purchase Cable & Wireless Optus, Australia’s largest competitive telecom operator. SingTel reported SGD 4.9 billion in turnover for the fiscal year ending March 31, 2001, up 1.2% over the previous year, despite the presence of competition in the market.<sup>33</sup> In May 2001, SingTel claimed 93% market share in the international telephone services market, noting that its domestic and international leased line revenues increased 30% during the year. SingTel’s domestic network includes 1.9 million fixed-line subscribers and 1.5 million wireless subscribers, of which 38% were pre-paid customers.

**Mobile One (M1).** The country’s second mobile licensee was formed in 1994 and won its cellular and paging licenses the following year. Both services were launched in April 1997, when SingTel’s monopoly over those markets expired. Although it began with a GSM-900 network, M1 also launched a CDMA (code division multiple access) system in 1998. M1 will be forced to migrate out of its CDMA spectrum, however, to make way for 3G operations. Its current shareholders are the Keppel Group (partially owned by Temasek Holdings) with 35%, Singapore Press Holdings (whose shareholders include SingTel) with 35%, and Great Eastern Telecommunications (30%), a joint venture of Cable & Wireless (51%), and Pacific Century Cyberworks (49%). In late spring 2001, these M1 shareholders were reportedly seeking to sell their shares, but no deal had been reached up to the time of this case study. M1 had about 881,000 cellular subscribers in June 2001, giving it approximately 32% of Singapore’s wireless market. In the year ending 31 December 2000, it logged a profit, after taxes, of SGD 79 million.

**StarHub.** StarHub became Singapore’s second fixed service and third mobile service licensee in April 1998, launching both services two years later. StarHub entered the Internet Service Provider (ISP) market in January 1999 when it bought an ISP named CyberWay. StarHub is 60% owned by Singapore Technologies Telemidia (wholly owned by Temasek Holdings), NTT (20%), and British Telecommunications plc (BT) (18%).<sup>34</sup> It has some 300,000 mobile service subscribers, but receives 17% of its revenues from Internet access provision. Although it has been under a license obligation to roll out a local access network to residential customers, up until the time of this case study, StarHub has concentrated on the IDD (international direct dial) and corporate market segments. In late April 2001, StarHub and Singapore Cable Vision (SCV) announced their intention to merge. On 14 June 2001, IDA ruled that StarHub could fulfill its rollout obligation through a merger with SCV, which owns an island-wide cable network.<sup>35</sup>

<sup>31</sup> See Section 3.3.

<sup>32</sup> See SCV Press Release 14 June 2001 at [http://www.scv.com.sg/news/view\\_news.asp?serial\\_no\\_=101&sub=Press](http://www.scv.com.sg/news/view_news.asp?serial_no_=101&sub=Press) and Box 4.3.

<sup>33</sup> See <http://www.singtel.com>

<sup>34</sup> BT has been widely reported in the Asian trade press as seeking a buyer for its stake in StarHub, as well as for its stakes in other Asian properties; BT has not commented publicly on these reports.

<sup>35</sup> See IDA Media Release 14 June 2001 at [www.ida.gov.sg](http://www.ida.gov.sg)

**Box 4.3: Singapore’s Major Facilities Based Operators (cont.)**

Final approval of the merger by IDA and some shareholders was still pending at the time of the writing of this case study. If all necessary approvals are given for the merger, the shareholders of the combined company will be Singapore Technologies Telemedia, Media Corporation of Singapore, BT, NTT Communications Corporation and Singapore Press Holdings.

**Singapore Cable Vision (SCV).** The country’s only cable TV system operator (under the brand SCV MaxTV), SCV also provides broadband Internet access through its cable modem service (SCV MaxOnline). It has obtained an FBO license as a telecommunications carrier, meanwhile, and it plans to upgrade its network to offer telephone services using voice-over-IP (VOIP) technology. That service, however, is on hold pending finalization of an open standard for VOIP services, which the company estimates may not occur until late in 2001, at the earliest. SCV provides cable TV service to 263,000 subscribers (about 25% of all homes passed), and it has roughly 51,000 cable modem service subscribers. SCV is co-owned 41.3% by Media Corp. of Singapore (fully owned by Temasek Holdings), 26.7% by Singapore Press Holdings (whose shareholders include SingTel), and 32% by STT Communications (a unit of Singapore Technologies which is 100% owned by Temasek Holdings).

In addition to these major Singaporean market players, the market has attracted several international operators, such as AT&T Corp., Belgacom, Concert, Deutsche Telekom AG, FLAG Telecom, MCI WorldCom, Nippon Telegraph and Telephone Corp. (NTT) and

others. Some of these foreign carriers have concentrated on the market for international transmission while some are rolling out domestic infrastructure to provide voice and data services to the business market.

**Figure 4.3 – Facilities-Based Operator (FBO) Licenses**

Licensed Prior to 1 April 2000 and Continuing with their Existing Scope of Operations	Licensed or Expanded Scope of Operations with effect from 1 April 2000
<ol style="list-style-type: none"> <li>1. Asia Broadcast Centre Pte Ltd</li> <li>2. Digital Network Access Communications Pte Ltd</li> <li>3. MediaCorp T &amp; T Pte Ltd</li> <li>4. Rediffusion (Singapore) Pte Ltd</li> <li>5. Singapore Telecom Paging Pte Ltd</li> <li>6. Singapore Telecommunications Ltd N.A.</li> <li>7. ST Mobile Data Pte Ltd</li> <li>8. StarHub Mobile Pte Ltd N.A.</li> <li>9. StarHub Pte Ltd</li> </ol>	<ol style="list-style-type: none"> <li>1. 360pacific (Singapore) Networks Pte Ltd</li> <li>2. Belgacom Asia Pte Ltd</li> <li>3. Concert Global Networks (S) Pte Ltd</li> <li>4. Davnet Singapore Pte Ltd</li> <li>5. East Asia Crossing Singapore Pte Ltd</li> <li>6. Edge Communications Pte Ltd</li> <li>7. Flag Telecom Limited</li> <li>8. Global One Communications Pte Ltd</li> <li>9. Harmony Telecommunications Pte Ltd</li> <li>10. MCI WorldCom Asia Pte Ltd</li> <li>11. MobileOne (Asia) Pte Ltd</li> <li>12. Nava Networks Singapore Pte Ltd</li> <li>13. Pacific Internet Limited</li> <li>14. QALA Singapore Pte Ltd</li> <li>15. Singapore Cable Vision Ltd</li> <li>16. Singapore Telecom Mobile Pte Ltd</li> <li>17. SMRT International Pte Ltd</li> <li>18. SP Telecommunications Pte Ltd</li> <li>19. ST Sunpage Pte Ltd</li> <li>20. ST Teleport Pte Ltd</li> </ol>

Source: IDA:

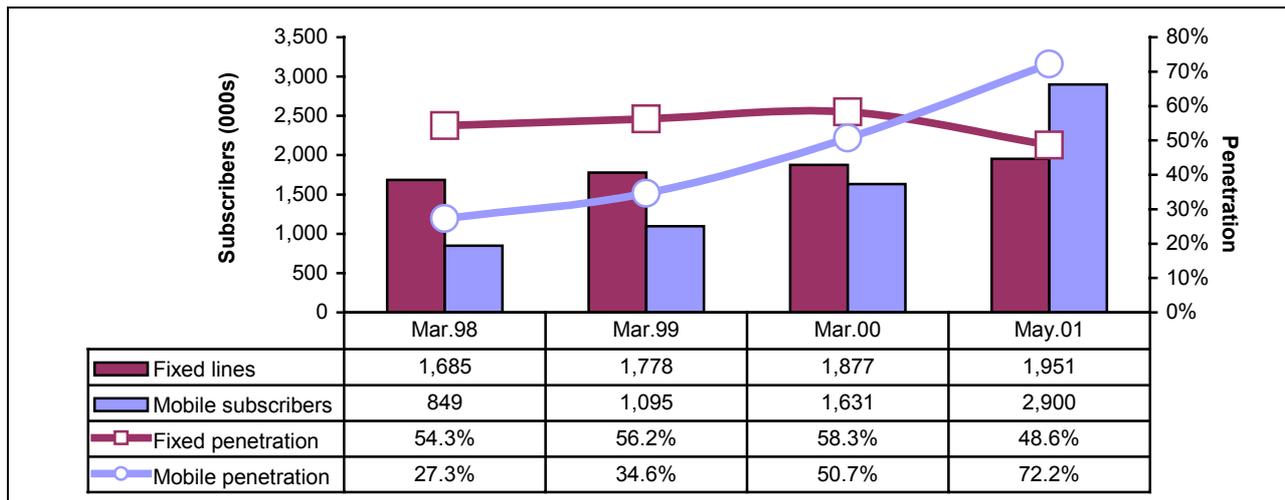
### 4.3 Telecom Market Indicators



As of February 2001, there were 1.94 million fixed telephone lines in Singapore, for a fixed line penetration rate of 48.3%. Growth in wire-line telephone service, however, has not kept pace with a flourishing mobile service market, and as in a growing number of countries, there are now more mobile service subscribers than fixed line subscribers. By May 2001, there were 2.9 million mobile service customers, for a service penetration rate of 72.2%. The vast majority of these subscribers had GSM-900 service, with only 54,700 using CDMA (code division multiple access) technology.<sup>36</sup> Mobile service subscription overtook wireline penetration in July 2000.

Source: IDA.

Figure 4.4 – Fixed and mobile telephone subscribers (000s), Singapore



Source: ITU adapted from IDA.

<sup>36</sup> IDA, *InfoComm Facts and Figures, Statistics for Telecom Services*, <http://www.ida.gov.sg>.

IDA estimates that in February 2001, the number of international “telephone call” minutes reached 191.85 million – a clear increase over the 147.20 million minutes recorded during the same month of 2000.<sup>37</sup>

The Internet access market, liberalized in October 1998, had reached a service penetration rate of about 50% by early 2001, according to IDA. It registered the number of dial-up Internet subscribers at 1.98 million by February 2001, with the number of leased circuit access subscribers at 3,300. StarHub began offering “free” Internet access in December 1999 (customers still had to pay per-minute telephone charges), followed by SingTel’s SingNet subsidiary. In an attempt to boost consumer take-up of its Internet service, SingNet even went so far as to establish an Internet access account for every one of SingTel’s telephone service customers in Singapore. SingNet also pioneered a flat-fee phone link for Internet access service customers that agreed to buy a monthly package.<sup>38</sup>

As of February 2001, however, the number of subscribers to mobile data services remained minuscule, at 12,000. That Figure had remained largely stagnant during the two previous years that IDA had kept tabs on that data.

#### 4.4 WTO Commitments

Singapore was an active player in the Negotiations on Basic Telecommunications conducted by the World Trade Organization (WTO), and it joined in the Fourth Protocol to the General Agreement on Trade in Services (GATS), also known commonly as the WTO Basic Telecommunications Agreement. Singapore’s commitments, submitted in April 1997, reflected the market conditions and expectations for further liberalization of the time. It agreed to license two additional basic telecommunication operators to begin service in April 2000.

In addition, Singapore committed to license additional operators after that date, and provision on a resale basis of public switched offerings and leased circuit services to closed

user groups were to be liberalized at the outset, as were resale based cellular telephony and paging. Singapore agreed to issue new licenses for cellular networks as of April 2000. For all of the facilities-based services covered by its commitments, Singapore agreed to allow up to 74% foreign investment, based upon 49% direct investment and 25% indirect investment; there were no investment limits included for resale services. In addition, Singapore adhered in full to the *Reference Paper* on regulatory principles.

Since making these commitments, Singapore has proceeded well beyond them in terms of market reform. For example, it no longer maintains *any* limits on the number of licensees – except due to limited spectrum – or foreign equity participation levels.

#### 4.5 Regulating Broadcasting: The Singapore Broadcasting Authority

The Singapore Broadcasting Authority (SBA) was formed following the corporatisation of Singapore’s broadcasting industry.<sup>39</sup> The Singapore Broadcasting Corporation (SBC), the former national broadcaster, was corporatised on 1 October 1994, with the passing of the Singapore Broadcasting Act. This Act also provided for the formation of a new statutory board – SBA – under the Ministry of Information and the Arts, to regulate and promote the broadcasting industry in Singapore.

The corporatised successor companies are Media Corp. TV, Media Corp. Radio, Media Corp. Transmission and Technology (MTT) and TV12, all of which come under a holding company – Media Corporation of Singapore Pte Ltd (MediaCorp), which also holds a stake in Singapore CableVision. MediaCorp News, MediaCorp Press, Media Corp Publishing, MediaCorp Studios, and MediaCorp Interactive were added to the MediaCorp group subsequently. MTT operates terrestrial transmission and delivery services for broadcasters, both within and outside the Media Corp Group, as well as satellite uplink/downlink services.

<sup>37</sup> id.

<sup>38</sup> For more information about the Internet in Singapore, see “The e-City: Singapore Internet Case Study,” April 2001, published by ITU.

<sup>39</sup> <http://www.sba.gov.sg/about.htm>

The objective of corporatisation was to make the successor companies of SBC stronger in the face of foreign competition. As private broadcasters, the successor companies have more operational flexibility, especially in maintaining their positions in the marketplace. This provides an impetus for the companies to be more efficient in delivering better programmes and to hold audiences with good local programming.

Ultimately, the government believes these companies will have to stake a place for themselves in the international and regional broadcasting markets as those markets become borderless. In the spring of 2001, SBA issued Singapore's second nationwide free-to-air television service license to SPH Media Works Ltd, as part of a graduated, phased approach to broadcasting liberalization, similar to the approach adopted by TAS for telecommunications liberalization prior to 2000. Under the license, SPH Media Works Ltd will operate two mass interest TV channels known as "Channel U", a mass Mandarin channel, and "TV Works", a mass English channel from May 2001. With the launch of Channel U and TV Works, TV viewers in Singapore receive a total of eight local free-to-air TV channels. These channels are the six MediaCorp channels, Channel 5, Channel 8, Central, Suria, Channel News Asia (CAN) and City TV and the two SPH Media works Ltd channels, Channel U and TV Works.

#### 4.5.1 SBA and the Internet

Although the merger that created IDA did not include SBA, the two statutory boards work closely with each other in areas of multimedia services, where their mandates most nearly overlap. Specifically, while IDA regulates and promotes the development of broadband networks and oversees Internet access services, SBA's job is to regulate the content that is delivered, via streaming and downloading, over those networks and from the Internet.

SBA can only be said to "regulate" the Internet to the extent that it applies to content codes and regulations to websites hosted within Singapore. The agency does not attempt to shut down access to offshore websites, although it maintains a "ban" on roughly 100 mass impact pornographic websites – a prohibition that is largely symbolic. While technologies exist to enforce the prohibition, these technologies are not employed. Nevertheless, Singapore makes

clear, through SBA, that it will not be a base for production of content and website hosting for material that violates its core precepts and societal norms. Therefore, SBA prohibits local content involving pornography, violence, and racially or religiously motivated "hate" speech.

Despite Singapore's reputation for firm control over its citizens' morality and behavior, SBA officials state that they generally pursue a "light touch" policy on Internet content. SBA does not attempt to monitor or regulate what individual residents view on personal computers in their homes or businesses. Rather, the Internet policy framework consists of three approaches: (1) public education to promote awareness of the positive as well as harmful aspects of the Internet; (2) encouraging industry to take the initiative to self-regulate and set their own standards through the implementation of Acceptable Use Policies, industry codes of practice and providing users with information on content management software; and (3) instituting a light-touch Class License Scheme and applying the Internet Code of Practice, which sets minimum standards for the healthy growth of the Internet. The Class License Scheme does not apply to e-mail or Internet Relay Chat applications, nor is it applicable to IP-based corporate data networks.

Officials of SBA and IDA state that the demarcation point between the two organizations' regulatory authority is the difference between transmission technology and content. That is, IDA oversees all of the network plant used to provide multimedia services, as well as those companies that develop, install, and operate that technology. SBA is concerned only with the nature of the content delivered over that infrastructure. In practice, however, the division of responsibility may be difficult to ascertain in some circumstances. Companies may provide packages of access services and proprietary content, making them, in some sense, both telecommunications service providers and broadcasters.

To launch their businesses, ISPs must obtain a license from IDA to offer Internet access services. Once they are licensed by IDA, they are automatically class licensed by SBA and must register with the Authority. Under the Class License Scheme, ISPs must ensure that the content provided over their services comply with

the Internet Code of Practice. They are not required to monitor the Internet or its users. They will also not be held liable for content for which they have no editorial control. However, they are required to remove prohibited content when asked to do so by SBA.

In terms of services, the new media field in Singapore is fraught with murky areas in terms of jurisdiction. Policy-makers at both agencies and MCIT concede that these issues have not been sorted out and remain under study.

### 4.5.2 Chances of Future Consolidation

Given the ongoing overlap between the agencies regarding Internet and multimedia services, the question of combining SBA and IDA into a further converged agency – thus completing the consolidation laid out in the vision of “info-communications” – remains a live one. Officials at IDA and MCIT recognize that depending on market developments, Singapore may re-examine whether a further merger uniting SBA and IDA may occur.

SBA’s authority over content continues to be seen as a separate function from IDA’s mission to promote and regulate the hardware and software engaged in information transmission and processing. One SBA official suggested that combining the agencies could even compromise the government’s ability to uphold community content standards, reasoning that the promotional thrust of IDA could overwhelm content controls. Faced with a choice of cracking down on a company for content standards lapses or helping it gain a stronger foothold in the market, a combined IDA/SBA might feel pressure to back off from the former, in favor of the latter, the official speculated.

As separate agencies, SBA and IDA currently have a close working relationship, with staff members serving together on interagency committees put together to explore convergence issues. There are regular meetings between the two regulatory communities, at the level of the statutory boards and at the ministerial level, as well. In addition, the level of informal access is high, with officials of the two agencies and their ministries feeling no restriction on their ability to call each other for meetings or telephone consultations. IDA officials have a good under-

standing of SBA’s mandate, and SBA is not interested in setting up unnecessary barriers to any company’s roll-out of innovative products or services.

## 5 IDA’s Role within Singapore’s Government

### 5.1 Policy Goals for the Creation of IDA

A discussion of Singapore’s policy goals in creating IDA is essential to understanding the agency’s role within the government. IDA was created in late 1999 to perform three distinct functions that the government views as complementary and compatible:

- 1 Regulatory and policy-making functions;<sup>40</sup>
- 2 Promotional, industry development and public outreach tasks;<sup>41</sup> and
- 3 Logistical/technical support, as the manager of IT and network systems for all of Singapore’s government ministries, independent agencies, and other offices.<sup>42</sup>

Each of these functions is seen as vital to Singapore’s development as an info-communications hub. During its first year of operation, IDA has acted under the belief that the agency will progressively move away from micro-management of the industry as and when competition takes root, and focus on putting in place and enforcing regulatory frameworks to ensure a level playing field in the industry. IDA plans to move toward a more strategic role in planning and steering Singapore into the leadership of info-communications industries and activities as a whole. At the same time that it works to stabilize the regulatory framework, IDA is actively working to promote and develop the market. Indeed, IDA’s promotional and developmental functions have been given slightly greater resources in terms of staffing than those devoted to its regulatory functions. (See Figure 5.1)

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<sup>40</sup> See Section 7.2 below.

<sup>41</sup> See Section 7.3 below.

<sup>42</sup> See Section 7.4 below.

**Figure 5.1 – IDA’S Main Functions**

IDA was created to perform three distinct functions. The government views these three functions as complementary and compatible and key to the nation’s development as an info-communications hub.

- Regulatory and policy-making functions
- Promotional, industry development and public outreach tasks
- Logistical and technical support, as the manager of the IT and network systems, for government offices

The efforts of Singapore’s government to provide a good environment for the flourishing of information technologies and communications are not unique. Many national governments are proactively involved in developing and organizing programs to foster industrial development – and many of those programs are pervasive in scope. In many countries, however, the task of regulating the nation’s telecommunications industries is divorced from the task of creating and implementing programs to foster and encourage industrial innovation and development. Where other governments have chosen to place promotional tasks within a government ministry or general economic promotion board – separate from the regulatory agency – Singapore has made a conscious decision to give both tasks to its sector-specific agency. Thus, IDA cannot be seen as a regulatory agency in the classic mold. Rather, it is the institutional manifestation of the high priority and collective, single-minded focus that Singapore’s government has decided to bring to bear on what it perceives to be a crucial and strategic collection of industries that are themselves converging and changing rapidly.

**5.2 The Role of the Statutory Board in Singapore**

IDA was created as a *statutory board* and is governed by the provisions of a Parliamentary act, the Info-Communications Development Authority Act of 1999, which is the legal foundation and underpinning for IDA’s operations. Understanding the role statutory boards play is also vital to understanding IDA’s role within the government.

Traditionally, laws and policies adopted by Parliament were implemented and enforced through various departments of Singapore’s government ministries. Ministry departments could not

engage in long-term planning because their budgets were directly dependent on Parliament and could change yearly. In addition, the staffs of the ministries were composed of civil servants, who were subject to being rotated regularly into positions in various different ministries.

To overcome some of these difficulties, Singapore began creating statutory boards to focus on each particular area of governance or economic life. Where the ministries have permanent secretaries and political appointees, statutory boards have chairmen and vest their daily operating authority in chief executive officers and directors general. Unlike government ministries, the boards’ operating budgets are not set by Parliament on an annual basis. Instead, statutory boards have the power to raise their own funds, maintain strategic reserves, to invest in other companies or in debt and equity instruments. They can own or lease land on their own authority. And because the staffs of statutory boards are not civil servants (they are designated as “public servants” or government employees, but are not part of the civil service personnel system), the boards have full authority over hiring and firing practices and decisions, and they can design salary and benefit programs to compete with the benefits packages offered in the private sector. In short, they are meant to operate more like enterprises than like traditional political institutions.

Statutory boards do not, however, operate without direct, often active, oversight by the government. Each board reports to a government ministry, which monitors the board’s activities and may exercise effective control over its decision-making, to varying degrees. Officially, the relationship between the board and its oversight ministry is spelled out in the legislation that creates each board. In practical terms, however, the degree of ministry involvement in a board’s decision-making appears to

vary as the permanent secretaries and other staff members in each ministry are routinely transferred to other departments in other ministries on a cycle that can be as short as three years.

Ministries and their related statutory boards generally enjoy a cooperative and collegial relationship, rather than a confrontational or arm's-length relationship. Power is seen to be flowing from the ministries to the boards, through statutory-based delegation. The oversight ministries make broad policy decisions while more routine decisions and activities are often left to the board to carry out on its own.

In keeping within this model, MCIT and IDA share a collegial relationship that is often manifested in a consultative approach in decision-making and policy formation. However, MCIT and IDA do not make all decisions collectively. MCIT sets the broad strategic and policy direction, while IDA undertakes operational and regulatory functions. Thus, IDA, in formulating the Infocomm21 Strategic Plan to establish Singapore as a leading info-communications hub in Asia, would seek the MCIT's views because this initiative would have wide impact on industry and the public. While IDA would be responsible for the plan's implementation through its various programmes and initiatives, the Minister is accountable to Parliament for the results. MCIT and IDA also endeavor to maintain independence in their decision-making processes to ensure that MCIT functions effectively as an oversight body. Under the Tele-

communications Act of 1999, parties aggrieved by IDA's decisions may appeal to the Minister or the court. (See Figure 5.2).

As with many statutory boards, IDA has control over its own budget, and the ability to buy, own, and dispose of property, invest in equity stakes of start-up companies, and to sue and be sued in Singapore's courts. Also like other statutory boards, IDA is under the oversight of a government ministry, the Ministry of Communications and Information Technology (MCIT).

### 5.3 Seat of IDA's Authority

The IDA's authority is statutorily vested in the office of a chairman and "members" of the Authority, which can range in number from two to 16, according to the judgment of the Minister of Communications and Information Technology ("the Minister"). In implementation, these "members" have become members of a 14-member board of directors, composed of a mix of high-technology company executives, trade groups, and government officials (see Figure 5.3, members of IDA board).<sup>43</sup> According to the IDA Act, the Minister appoints the Chairman and the members, and the members can include the chairmen of both IDA and the SBA. The Minister also appoints a Deputy Chairman of IDA. Board members serve for terms of three years, and they may be reappointed, at the discretion of the Minister. The board is obliged to meet, at the discretion of the Chairman, and decisions are to be made by a simple majority of votes.

#### Figure 5.2 – The Statutory Board in Singapore

IDA is one of many statutory boards in Singapore. All statutory boards share the same features:

- Created by Parliamentary Act
- Governed by a Chairman
- Report to oversight Ministry
- Control over its own budget
- Full authority over hiring and firing and staff conditions
- Ability to sue and be sued in Singapore's courts

<sup>43</sup> The latter group includes the CEO of IDA and the Chairman of SBA.

**Figure 5.3 – Members of IDA Board**

- Lam Chuan Leong (Chairman), Permanent Secretary, Ministry of the Environment
- Peter Ho (Deputy Chairman), First Permanent Secretary, Ministry of Defense
- Yong Ying-I, CEO, Infocomm Development Authority of Singapore (IDA)
- Kari Ahola, Senior Vice President, Nokia Networks, Asia Pacific, Nokia Pte Ltd
- Willie Cheng, Chairman Singapore IT Federation and Country Managing Partner, Accenture
- Lim Hock Chuan, CEO, Singapore Broadcasting Authority
- Jane Crawford, Managing Director, Asia Pacific 3i plc
- Dr Arnoud De Meyer, Associate Dean, INSEAD
- Les Hayman, President & CEO, SAP
- Heng Chee How, Deputy Secretary-General, National Trades Union Congress
- Gary Jackson, VP Asia Operations, Cisco Systems (USA)
- Low Check Kian, Managing Director, Equity Markets Asia, Merrill Lynch
- Leslie Loh, Chairman/CEO, System Access Pte Ltd
- Charles Ormiston, Vice President/Partner, Bain & Co.

Source: IDA.

The IDA Act also creates a post within the agency for a Chief Executive, to be approved by the Minister. In fact, the Chief Executive of IDA, Yong Ying-I, is also the Deputy Secretary of MCIT. The Chief Executive is responsible to the Chairman for daily administration of IDA. The IDA Act also empowers IDA to appoint someone to act in the place of the Chief Executive during any period of absence by the Chief Executive. Keng Thai Leong, who also serves as the Director General of Telecommunications, has been appointed as the Deputy Chief Executive. IDA also has full rights to hire or fire any other full-time staff members, as it sees fit. These employees have personal immunity from liability for their acts in carrying out the Authority's lawful mandate.

The Minister has the power to remove from office any "member of the Authority" (in practical terms, any board member) at any point in time that the Minister feels removal is in the public interest or is necessary to ensure "effective and economical performance" of IDA's functions.<sup>44</sup> This assures that IDA's board serves at the pleasure of the Minister.

Moreover, the Minister names the Chairman of IDA and must approve the selection of the Chief Executive of the agency, who cannot be removed from office without the Minister's permission. Collectively, these provisions appear to give the Minister clear control over the choice and even length of service of the top officials of IDA. This fact is representative of the extent to which the Ministry retains control over the agency, as will be explored in further detail in Section 5.5 below.

The Chairman and the Board have wide latitude to delegate any or all of their powers, functions, or duties to parties within the agency.<sup>45</sup> Authority might be delegated to the Chief Executive, the staff, a management committee, or – in the case of the Board – "any other person" to whom the authority wishes. In effect, this allows the Board and Chairman to grant extensive power and operating independence to the top executives and staff of the agency, and even to permanent and ad hoc committees established within IDA, both of which, in fact, the Board has done.

<sup>44</sup> See IDA Act, First Schedule.

<sup>45</sup> Id.

#### 5.4 Role of the IDA Board of Directors

The role of the IDA Board of Directors is a non-executive one. The Board does not have a role in day-to-day decision-making within the agency. Rather, it operates in an advisory or “strategic” role, providing an important industry viewpoint in setting the overall agenda and determining the general direction of the agency. In other words, the Board gives Singapore’s business community an opportunity to provide its views and perspectives to the management of IDA. In turn, the Board constitutes a sounding board for the management to gain private sector input.

The Board meets quarterly and does not vote on regulatory matters or decisions. While the Board does have the power to vote, as a matter of practice, the Board adopts decisions by consensus. It decides annually on a strategic work plan that embodies the major goals of the organization, but the bulk of its powers have been delegated to the Chief Executive and the staff of IDA.

In the context of Singapore’s government structure, which favors corporate-style statutory boards, IDA’s board does not take votes on regulatory orders or decisions, nor are its meetings open to the public. From the perspective of the telecommunications operators in Singapore, the Board’s activities are largely opaque and appear to have no bearing or effect on their daily operations or strategic plans within Singapore, although the Board is comprised mostly of members of the private sector. As such, the Board is itself a representation of the views of the private sector.

#### 5.5 The Ongoing Role of MCIT

IDA’s oversight ministry, the Ministry of Communications and Information Technology (MCIT), monitors four other statutory boards including the Civil Aviation Authority, the Maritime and Port Authority, the Land Transport Authority and the Public Transport Authority. With most of its executive authority devolved into the statutory boards, MCIT has a staff of only about 70 individuals (including clerical workers), making it, essentially, the professional staff of the Minister.

In Singapore’s political system, the Minister must have the final decision on any action that

will (1) have a major strategic or policy impact, (2) have a major political impact, (3) have a major financial impact (which has been included in a rule requiring MCIT to approve any decision involving investment of monies in excess of SGD10 million), or (4) affect a large percentage of Singapore’s population.

Thus the Ministry has had a role – at some juncture – in formulating the final decisions on virtually every important action taken in the telecommunications arena, both before and after the creation of IDA. The Ministry represents the ultimate political direction of the elected leadership of Singapore and works collaboratively with the management of IDA on major telecommunications policy decisions.

Depending on how high the stakes are, political input may come through the Ministry from the Deputy Prime Minister or the Prime Minister. IDA consults with MCIT on regulatory decisions with policy implications, such as the Code of Practice for Competition (See Sections 6.2 and 6.3). On the other hand, if a decision is seen as routine, without precedent-setting repercussions, it may be made by a unit-level manager within IDA, perhaps after some consultation with the IDA Director General (Telecom).

Staff members of MCIT (there are only 10 devoted to communications issues) routinely attend meetings at IDA or sit on committees involving IDA and other, allied agencies. In researching and drafting policy reports and cost-benefit analyses, MCIT can draw on IDA staff resources and statistics. As a result of the close working relationship between MCIT and IDA, decisions are not necessarily always referred to the Ministry on an official, formal basis; rather, the Ministry’s guidance may be provided informally through individual contacts and meetings between the organizations.

At this stage in IDA’s existence, many of its decisions have been deemed to involve broader policy implications. Thus, decisions like the IDA Code of Practice for Competition were made with significant input from MCIT. The Minister was given a detailed briefing on the Code and was integrally involved in finalizing and approving it. The Code was treated as subsidiary legislation, meaning the Minister was

required to publish it in the government's official gazette. Moreover, the approval of the Code was too important a decision for the Minister not to be involved. On the other hand, IDA approved SingTel's Reference Interconnection Offer (RIO) without input from MCIT.

The difference in the way these two decisions were undertaken may be explained by the fact that a decision like the Code, which sets the framework for competition in Singapore, is by its very nature part policy and part regulation. In order to facilitate full competition, the nation had to establish both a competitive framework and the rules for implementing that framework. Among other things, the Code provides for technologically neutral and asymmetric regulation (decisions that are more policy-oriented) as well as setting rules for interconnection and licensing (decisions that are more regulation-oriented). As competition begins to take hold in Singapore, IDA's decisions may evolve from focusing on policy to targeting implementation, allowing the Authority greater autonomy in its decision-making.

In the meanwhile, industry has indicated that it is often unsure whether IDA decisions have been taken by IDA alone, or in consultation with or under direction from MCIT – regardless of whether they involve policy or regulation. While the statutory board framework does not call for the creation of a commission that makes decisions in a public fashion, IDA is moving toward greater transparency in its decision-making role.

Moreover, while MCIT has had involvement in major IDA decisions and actions, this has not affected IDA's effectiveness. As will be seen in the discussions that follow, the Authority's initial key decisions – including the Code and RIO – have been lauded by market players and analysts alike as models of fair and impartial regulation designed to serve as a blueprint for effective competition. (See Figure 5.4)

## 6 Regulatory Functions of IDA

The Telecommunications Act of 1999 (The Telecoms Act), passed by Parliament in tandem with the IDA Act, provides much of the legal basis for IDA's actions as the market regulator. (See Figure 6.1)

### 6.1 Licensing

The Telecoms Act endows IDA with the right to provide all telecommunications services within Singapore and gives it authority to transfer that right to operators through its power to issue licenses and to designate certain licensees as Public Telecommunications Licensees or "PTLs." PTL designation usually entails an infrastructure build-out obligation but also allows the licensee to take full advantage of the property-access rights and other privileges granted in the Telecommunications Act. In essence, becoming a PTL entails taking on the full rights and responsibilities of being a public utility.

#### Figure 5.4 – Role of Ministry of Communications and Information Technology (MCIT)

MCIT has played a role in formulating the final decisions on many important actions taken in the telecommunications arena both before and after the creation of IDA. The following are some examples of high-level telecommunication decisions made by MCIT or decided with its input:

- The decision to accelerate the advent of full competition from 1 April 2002 to 1 April 2000, including the decision to remove foreign investment limits\*.
- The decisions on the levels of monetary compensation to be awarded to SingTel and StarHub for abrogation of the exclusive and duopoly guarantees in their basic service licenses.
- The decision to finalize and approve the Code of Practice for Competition in the Provision of Telecommunications Services published on 15 September 2000 by IDA.

\* In fact this decision was one that was taken at the very highest levels of the government.

IDA also may attach conditions to licenses, and it can modify those conditions. Before altering a license, the agency must notify the licensee, in writing, of its intent, and it must give the licensee no fewer than 28 days to respond to the proposed modification. Licensees can appeal any IDA decision to alter their licenses, but they must do so within 14 days of IDA's decision.

In general, there are two categories of licenses for the provision of telecommunication services in Singapore: (1) Facilities-Based Operator (FBO) licenses and (2) Services-Based Operator (SBO) permits. The FBO license is always an individual license, while the SBO may be an individual license, or for some services, a class license.<sup>46</sup> Class licensees may include any kind of establishment, such as a hotel, store or even a restaurant, that resells the telecommunications services of another operator. All providers of telecommunications services (including those

that in other countries would be considered value-added or enhanced service providers) must be licensed in Singapore.

Depending on the scope of their operations, FBO licensees can apply to be designated as PTLs. Other FBOs, by contrast, may enjoy more freedom to select where they do or don't extend their networks or provide services.

FBO licenses are required, in general, for any kind of network infrastructure build-out and operation. This includes international and domestic fixed wire transmission or switching facilities such as international gateways or undersea cable landing facilities. It also includes public cellular mobile networks, paging networks, public mobile data and trunked radio services, as well as local multipoint distribution systems (LMDS). Wireless services are generally licensed separately, as a function of

### Figure 6.1 – Regulatory Functions of IDA

IDA's regulatory functions include the following:

- Licensing
- Rulemaking through Codes of Practice, Standards of Performance, Directions and Advisory Guidelines
- Consumer Protection and Quality of Service
- Interconnection
- Preventing Unfair Competition
- Equipment Approval
- Property Access and Modification Enforcement
- Spectrum Allocation
- Numbering
- Competition and Merger Review

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<sup>46</sup> An individual license is awarded to a company based on a specific application filed by the company and approved by IDA. Such a license may contain conditions particular to that company and may be modified by the regulator or through an application by the company. Class licenses, however, are broad authorizations that apply to any company offering a particular service or set of services. Companies do not need to apply for class licenses in order to offer those services. The rules and conditions that apply to each class license are "gazetted" (published in the official government gazette) and any company that begins to provide that service is presumed to have read, understood and complied with those rules.

spectrum management policies. Other than for spectrum scarcity reasons, there is no limit on the number of licenses that can be issued for services in Singapore.<sup>47</sup> Whenever spectrum limits are an issue, licenses may be distributed through a selection or auction process.

Certain SBO licenses are distributed on an individual basis. Those may be international simple resale (ISR), resale of leased circuits, virtual private network (VPN) services, managed data network services, Internet access, Internet exchange services, store and forward value-added network services, mobile virtual networks (MVNOs), and live audiotex services.

Other services provided over the public switched telephone network and the Internet are subject to a class license. These would include simple resale of public switched telephony, international callback services, Internet-based voice or data services (Internet telephony), or international calling card services. Class licensees are able to offer their services without obtaining a specific authorization, but they are subject to all relevant codes of practice and service quality standards.

## 6.2 Rulemaking: Codes Of Practice

The Telecommunications Act gives IDA three general options through which it can implement regulations. IDA can issue:

- 1 “Codes of practice” and “standards of performance” that apply to all licensees offering services;
- 2 “Directions” to specific licensees, instructing them to alter their behavior and giving them a time limit for compliance; and
- 3 “Advisory guidelines” involving any aspect of telecommunications.

IDA has exhibited a growing reliance on published and written codes as the basis for

reasoned and non-preferential decision-making. In particular, the Act provided the legal basis for the *Code of Practice for Competition in the Provision of Telecommunications Services* (the Competition Code or the Code). The Competition Code was drafted as the blueprint for IDA’s regulation of the competitive telecommunications industry in Singapore. It is augmented by other codes of practices, including a code for building access issues, but it remains by far the most influential and far-reaching document, having introduced asymmetrical regulation and a range of consumer-protection provisions not previously in place. The Code also lays the foundation for interconnection policies, including the preparation by SingTel of a Reference Interconnection Offer (RIO), which was finalized in January 2001. As a result of the Telecoms Act, the Code, and the RIO, there is a much larger and more detailed canon of regulations for telecommunications than has ever before been in effect in Singapore.

The text of the Code was prepared with the major involvement of outside consultants from the United States, which provided legal and other expertise deemed to be lacking in Singapore.<sup>48</sup> The process of finalizing the Code involved several rounds of public consultation, initiated by IDA on 17 April 2000.<sup>49</sup>

IDA held a public forum, attended by 130 persons, on 15 May 2000, at which it presented an overview of the proposed Code. Several industry representatives also gave presentations on the proposals. IDA accepted comments on the proposed Code until 5 June 2000 (extended from 22 May 2000). It then incorporated those comments in a second draft and repeated the consultation process during the summer of 2000. The results of the second round of consultation were incorporated into further changes to the text, which ultimately was finalized and published on 15 September 2000.

<sup>47</sup> Because of spectrum issues, there are only three licensed mobile operators in Singapore.

<sup>48</sup> Although IDA prefers not to publicize the names and contact details of the consultants it uses, this information can be provided by IDA directly to interested parties

<sup>49</sup> IDA issued two documents at that time: the Competition Code, and a document outlining proposed interconnection policies, titled *Interconnection/Access in a Fully Liberalised and Convergent Environment*.

Figure 6.2 – Web-Based Consultation On Code of Practice for Competition

Source: Adapted from IDA (<http://www.ida.gov.sg>) and Squire, Sanders & Dempsey.

The Code is designed to embody several principles that will serve as guiding lights to IDA and the industry. First, IDA believes that where competition exists in the market, it need only apply a “light” regulatory hand and should allow market forces to dictate operator behavior. Therefore, the code is built around the principle of asymmetrical regulation, applying more rigorous rules to carriers deemed to be “dominant” within the market, and leaving “nondominant” carriers more freedom to operate without extensive oversight. As competition takes hold in more and more markets, IDA is supposed to increasingly step away from dominant-carrier regulation, concentrating on enforcement of consumer-protection rules and encouraging the industry to police itself through mutually agreed private-sector codes of practice.

Second, pursuant to the logic behind IDA’s very existence, the Telecommunications Act and the Code seek to embody the principle of technology neutrality. Operators of networks are, at least in theory, subject to the same rules and obligations, regardless of what platform those operators use – whether it’s a traditional telephone network, a cable TV system or a broadband, IP-based fiber network. The very language defining *telecommunications service* in the Telecommunications Act is broad and includes the transmission not only of simple voice messages

but also messages that have been “subjected to rearrangement, computation, or other processes.” This definition takes in services that in other jurisdictions would be regarded as “value-added” or “enhanced” services and would be regulated under a different framework or standard.

Third, the provisions of the Code, in particular, seek to balance encouraging short-term market entry and long-term investment. Thus, while the Code calls for network unbundling, Singapore’s PTLs are often given strict network build-out goals and benchmarks, which cannot be met by simply reselling or incorporating elements of another PTL’s network. Similarly, in setting wholesale rates for dark fiber, IDA sought to lower prices for domestic fiber and international private line circuits. At the same time, however, they also tried to preserve a price floor that would not obliterate all financial incentives for additional carriers to build their facilities in the market. (See Figure 6.3) The chapter that follows provides more detail on implementation of the Code, bearing in mind that it had been finalized for less than one year at the time of the writing this case study. It is therefore premature to reach any long-term conclusions on whether any or all of the principles embodied in the Code will be borne out through its implementation and market behavior. Such an analysis will have to be conducted over the months and years ahead.

**Figure 6.3 – Code of practice for competition in the provision of telecommunications services**

The Code of Practice for Competition in the Provision of Telecommunication Services (Code) serves as a blueprint for IDA’s regulation of competition in Singapore’s telecommunications industry. The main elements of the Code are:

- Embodiment of the principle of **asymmetric regulation**
  - classifying all licensees as either dominant or non-dominant
  - placing a greater regulatory burden on dominant than non-dominant licensees
  - SingTel and SCV classified as the only dominant licensees
  - SCV (temporarily) exempted from certain obligations such as unbundling requirements
- Embodiment of the principle of **“light” regulation** where competition exists
  - reducing IDA’s involvement in disputes between non-dominant licensees
- Embodiment of the principle of **technological neutrality**
- Regulatory guidelines on **interconnection regulation**
  - Setting guidelines for all interconnection agreements
  - Requiring SingTel to prepare and adhere to a Reference Interconnection Offer (RIO)
- **Fostering short-term market entry and long-term investment**
- **Sunset clauses** in the form of mandatory and optional review, allowing IDA to modify the Code to adapt to market and technological developments

## 6.3 Elements of the Code of Practice for Competition

### 6.3.1 Dominant And Non-Dominant Licensees

The advent of full competition meant a theoretical reassessment of the need for IDA to continue closely regulating non-dominant carriers in a market that would be increasingly governed by market forces. The Code makes clear that, in terms of full-scale economic regulation, a greater burden will fall on operators considered to retain market power.

To implement the principle of asymmetric regulation, the Code recognizes two classes of licensees: dominant and non-dominant licensees, each with a different set of rights and obligations. According to the Code, an FBO will be classified as dominant if it controls facilities that provide a direct connection to end users in Singapore and meets one of the following two criteria:

- 1 “The facilities are sufficiently costly or difficult to replicate that requiring new entrants to do so would create a significant

barrier to rapid and successful entry by an efficient competitor” or

- 2 “The licensee has the ability to restrict output or raise prices above competitive levels for telecommunication services provided to end users over those facilities.”<sup>50</sup>

Operators designated as dominant have the right to petition IDA for reclassification, provided the operator is able to offer information proving that it meets none of the two criteria. Likewise, operators may seek an exemption from some or all of the requirements imposed on dominant carriers.

Based on the Code’s definition, IDA classified two operators as dominant: SingTel and Singapore Cable Vision. These two operators – the latter predominantly a cable TV system operator – constitute the only companies with wireline networks reaching nearly every end user in Singapore. While SingTel bore the full brunt of dominant carrier regulation, IDA exempted SCV from many of the dominant carrier provisions, including the unbundling mandate,

<sup>50</sup> See Section 2.2.1 of the Competition Code.

which would have forced the cable operator to allow access to its cable modem service for competing Internet access providers.<sup>51</sup> SCV was required, however, to file tariffs for its services with IDA and was otherwise prohibited from abusing its dominant position by engaging in predatory pricing, cross-subsidization of competitive services through revenues obtained from tariffed services, and discrimination against other operators.

SCV opposed IDA's designation of it as a dominant operator, particularly disputing any contention that it had the ability to set or influence prices for Internet access. SCV maintained that it had no market power for broadband Internet access, but it failed to convince IDA that it did not qualify for dominant classification based on the other terms of the Code's definition. SCV did succeed, however, in securing a broad exemption from the rules that otherwise would apply to it under the Code. IDA agreed with SCV that requiring the unbundled access to its cable modem service would be technologically difficult, if not unfeasible entirely, and that such unbundling would be premature in a rapidly changing broadband market.

In practical terms, the new regulatory framework means that IDA will expend more of its regulatory resources monitoring SingTel and, to a lesser extent, SCV. Overall, non-dominant operators believe that IDA is fair, nonbiased, credible and effective. But there is concern that perhaps IDA has been too optimistic about the role market forces or industry "self-regulation" would play in Singapore's telecommunications market, at least at this relatively immature and developing stage. In an era of asymmetric regulation, the non-dominant operators are looking for some assurance that IDA will respond adequately to their issues, even as IDA continues to monitor SingTel.<sup>52</sup>

### 6.3.2 Mandatory and Optional Review

The Code was drafted as a regulatory response to the phenomenon of convergence and the erosion of historic differences among platforms such as wireline, wireless, cable and satellite.

<sup>51</sup> A service known in some countries as "cable open access".

<sup>52</sup> See in particular the interconnection discussion at 6.3.4.

Nevertheless, it also recognizes that because "convergence is in its early stages, with different platforms subject to differing degrees of competition," different regulatory obligations may initially be imposed on licensees using different platforms.<sup>53</sup> In an effort to address this issue, the Code also includes a triennial built-in review mechanism. Following a period of public comment, IDA can modify or eliminate provisions of the Code that are no longer deemed necessary following the growth and development of competition.<sup>54</sup> IDA may also modify the Code on its own initiative at any time.<sup>55</sup>

In essence, these provisions mean that IDA is empowered to impose unbundling requirements (or other dominant-operator provisions) on SCV whenever market conditions and technology develop accordingly. Senior IDA officials indicated that this is an option they intend to invoke at the appropriate time.

### 6.3.3 Consumer Protection and Service Quality

The Code imposes certain obligations on all licensees, whether they are dominant or nondominant. Among these are obligations designed to provide a uniform blanket of protection for consumers from unfair market practices or inferior service. All licensees are required to disclose to their end users, in advance, all prices and terms of service, in some form, and dominant carriers must file such information in tariffs with IDA. In addition, operators must provide customers with timely and clearly worded bills.

The Code contains provisions designed to prevent operators from unilaterally switching end users over to their services without prior approval of those customers. This practice, which is tantamount to stealing customers from other operators, has been a serious consumer problem in countries where telephone service

<sup>53</sup> See Section 1.5.4 of the Code of Practice for Competition.

<sup>54</sup> Id, Section 1.5.5.1.

<sup>55</sup> Id, Section 1.6.2.

markets have been liberalized.<sup>56</sup> The Code bans switching an end user from one operator’s service to another without prior consent of that end user. If a customer is switched without permission, the customer is not liable to pay any charges to the carrier that conducted the improper transfer, and the wrongdoer is required to pay all costs for switching the customer back to his or her original, chosen carrier.

Customers also are not required to pay for any services or telecommunications equipment they have not ordered. This prevents unscrupulous operators (or those without sufficient billing procedures) from simply tacking on line items in bills that customers never wanted or never received. In all billing disputes, the end user must be given the right to challenge the operator’s calculations; the operator must respond to such a challenge within 30 days. IDA may assist in resolving the dispute, or the parties can resort to court action (including Small Claims Tribunal cases) to obtain relief.

Operators are obliged to protect and restrict their use of End User Service Information (“EUSI”), which is defined as any information an operator

obtains about or from a customer in the process of providing services or equipment. This may include calling patterns, credit history, the person the customer may have called, the duration of calls, and the customer’s address and phone number. An operator may use such information only for purposes of planning, providing, or billing for the telecommunications services it provides to that customer. It may also use some information to facilitate interconnection with another carrier or to provide assistance to law enforcement agencies. Unless the customer gives prior authorization, the operator cannot use EUSI to market additional goods or services, or sell that information to third parties or affiliates.

To protect and maintain a basic foundation for high service quality, the Code calls for IDA to issue minimum standards of quality. Operators must publish, each year, data indicating its track record in meeting those standards. IDA requires the operators to report how long it takes to provide an ordered service, how long to respond to repair requests, how long it takes to respond to billing inquiries, and other elements of service quality. (See Figure 6.4).

Figure 6.4 – Quality of Service Standards

PUBLIC CELLULAR MOBILE TELEPHONE SERVICES	
% of time network is operating (P)	over 99%
% of calls lost due to busy channels (P)	below 5%
% of calls successfully connected (P)	over 95%
Extent of service coverage (P) :	
* On street level	over 95%
* In-building ( public access areas )	over 85%
Average time taken for calls to be connected	below 5 seconds
% of calls dropped or terminated abnormally	below 5%
Time taken to activate service from receipt of application	below 4 hours

<sup>56</sup> In the United States, the practice of switching an end user’s presubscribed carrier without knowledge or permission of the end user is known as “slamming”. When operators improperly bill customers for services they have never ordered or received, that practice has been dubbed “cramming”.

Figure 6.4 – Quality of Service Standards (cont.)

<b>INTERNET ACCESS SERVICES</b>	
Network availability (P)	over 99.5%
System accessibility (P) :	
* Dial-up access	over 95%
* Leased-line access	over 99%
Service Activation Time from date of receipt of application :	
* Dial-up access	3 working days or fewer
* Leased-line access	7 working days or fewer
<b>WIRED TELECOMMUNICATION SERVICES</b>	
<b>Direct Exchange Lines</b>	
Installation time within 5 working days or on date specified by customer (P)	95%
Appointment met on date specified by customer	98%
Waiting time	1 month or less #
<b>Faults fixed within (P)</b>	
* 24 hours	90%
<b>Billing</b>	
Enquiries dealt within 5 working days	100%
<b>International Direct Dialed Services</b>	
Activation of IDD service on working lines :	
* within 1 working day	95%
* within 2 working days	99.9%
<b>Local &amp; International Leased Circuits</b>	
Service reliability (P) :	
* Analogue	99.6%
* Digital	99.7%
<b>Leased circuit requirement provided within date agreed by customer (P)</b>	
International Analogue/Digital	95%
Local Analogue/Digital	93%
<b>Mean time to repair (P)</b>	
Analogue	5 hours
Digital	3 hours

(P) refers to primary indicators. Others are secondary indicators.

# refers to cases where the service cannot be provided within the normal 5 days due to unavailability of outside plant facilities such as lack of spare local pair at the serving or alternative distribution point.

Note: For more details see IDA's website at: <http://www.ida.gov.sg>.

Source: IDA

In addition to the previous consumer protection provisions, which apply to all licensees, the Code mandates that dominant carriers (1) provide telecommunications services to any end user, upon reasonable request; (2) provide services at “just and reasonable” prices, terms, and conditions; (3) not discriminate for affiliates or against non-affiliates in terms of price and quality of service being provided; (4) provide service pursuant to tariffs filed with IDA; and (5) give competitors unbundled access to their network infrastructure (See Section 6.3.4, below).

#### 6.3.4 Interconnection

Under the Code, all FBOs – and SBOs that use switching or routing equipment – have a duty to interconnect with other licensees, either directly or indirectly through transit arrangements with third parties. If the two interconnecting carriers are both nondominant, IDA generally will not get involved in interconnection negotiations, although it requires that all concluded agreements be filed with the agency. As part of the principle of light regulation, IDA will “conciliate” between two nondominant operators – but only if *both* operators seek IDA’s help. Otherwise, interconnection agreements are viewed as private contracts between commercial entities.

All interconnecting carriers must agree on terms of compensation for originating, transiting, and terminating traffic. They cannot discriminate among interconnecting carriers in terms of quality of the technical interconnection, and both must do nothing to cause harm to each other’s network. The receiving carrier must protect any information of a proprietary or confidential nature that is provided by the other carrier to another in the course of interconnection.

With its emphasis on asymmetrical regulation, the Code sets a different framework for interconnection with dominant carriers – essentially, SingTel. There are three options for obtaining interconnection with SingTel: (1) negotiating a new, individualized interconnection agreement with SingTel, (2) adopting an agreement SingTel has negotiated with another similarly situated licensee following the effective date of the Code, or (3) interconnecting by accepting the

SingTel RIO, which has been approved by IDA. If a competitive operator accepts the RIO, it does not have to negotiate with SingTel at all. Moreover, the Code requires SingTel’s offer to be “modular” – a competitor can purchase only the elements of interconnection it needs or wants. The five basic elements of interconnection service are:

- Physical interconnection;
- Origination/transit/termination services;
- Essential Support Facilities;
- Unbundled Network Elements;
- Unbundled Network Services.

SingTel’s RIO was developed and finalized through a public consultation process similar to that used to finalize the Code. Under the Code, SingTel was required to prepare a draft RIO for approval by IDA. IDA published SingTel’s proposed RIO on its website on 30 October 2000 and invited “licensees, potential entrants, other regulatory authorities, users and any other interested parties to submit written comments on the proposed RIO.” IDA published all comments on its website, noting that it would not entertain any private meetings regarding the RIO. After reviewing all public comments, IDA approved the RIO on 31 January 2001, making it effective the same date and publishing it on its website.<sup>57</sup>

Pursuant to the Code and the RIO, SingTel is barred from any discrimination in favor of its affiliates, and it must provide interconnection at any technically feasible point or location on its network. Prices for interconnection must be based on incremental forward-looking economic costs. SingTel (and any other dominant carrier) must allow other FBOs to purchase certain designated services at wholesale rates, allowing other operators to obtain them as inputs to their own services. IDA has designated dark fiber and international private leased circuits as services that must be priced at wholesale (retail-minus) rates.

<sup>57</sup> In fact, the proposed RIO, all comments, the revisions IDA required and the final RIO were all available on IDA’s website at the time this case study was published. See: <http://www.ida.gov.sg> under Policy & Regulation/Papers/Consultation Papers/Proposed Reference Interconnection Offer.

Figure 6.5 – Web-based Public Consultations on IDA’s website

The screenshot shows the IDA Singapore website with a navigation menu on the left and a 'Consultation Papers' table in the center. The table lists three consultation papers, with the third one, 'Proposed Reference Interconnection Offer (RIO)', being the focus. To the right of the table is a list of 13 comments on this offer, including entities like Cable and Wireless plc, East Asia Crossing Singapore Pte Ltd, and Concert Global Networks (Singapore).

No.	Title	Date issued	Date closed for comments
1.	<a href="#">Review of Accounting Separation for the Telecommunication Sector in Singapore</a> Extension of time for FBO Licensees to submit response to Proposed Accounting Separation Guidelines	23 May 2001	21 June 2001
2.	<a href="#">Proposed Regulatory Approach for 3G Mobile Virtual Network Operators (MVNOs)</a>	27 April 2001	31 May 2001
3.	<a href="#">Proposed Reference Interconnection Offer (RIO)</a> SingTel's Proposed RIO Industry Comments on SingTel's Proposed RIO IDA's Notification on Required Modifications to Proposed RIO Extension of Time for SingTel to submit Revised Proposed RIO Revised proposed RIO Extension of Review by IDA Request for Exemptions by SingTel Approval of RIO by IDA	30 October 2000 30 October 2000 13 December 2000 22 December 2000 11 January 2001 26 January 2001 29 January 2001 31 January 2001	15 November 2000

**Comments on SingTel's Proposed Reference Interconnection Offer (RIO):**

- 1 Cable and Wireless plc
- 2 East Asia Crossing Singapore Pte Ltd
- 3 Concert Global Networks (Singapore)
- 4 MCI Worldcom Asia
- 5 MobileOne(Asia)
- 6 Equant Singapore
- 7 Singapore Cable Vision
- 8 StarHub
- 9 Qala Pte Ltd
- 10 Macquarie Corporate Telecommunications Pte Ltd
- 11 Harmony Telecommunications Pte Ltd
- 12 British Telecommunications
- 13 Pacific Internet Ltd

Source: IDA (<http://www.ida.gov.sg>).

The unbundling mandate includes requirements for SingTel to offer both “unbundled network elements” (UNEs) and “unbundled network services” (UNSS). The Code currently mandates access to only one UNS, emergency service access, including access to emergency call centers and the ability to add telephone location data for subscribers to the central emergency services database. The list of UNEs is somewhat larger. SingTel must offer local loops, which include feeder and distribution plant, the distribution point at a building, and in some cases, inside wiring.

SingTel must also offer sub-loop access at various points in the local loop, including points where feeder and distribution plant meet (remote terminals or cabinets) and building distribution points. The Code calls for unbundled access to main distribution frames in local switching centers, in order to facilitate cross-connects to competitors’ own collocated equipment. Finally, the Code allows “line-sharing” or the provision

of high-frequency portions of loops to provide ADSL service.<sup>58</sup>

SingTel must allow physical collocation of other FBOs’ equipment in its facilities – both exchanges and remote terminals – where such collocation is technically feasible. If there are technical barriers or space limitations, SingTel can provide virtual (distant) collocation through cabling between its facilities and those of the interconnecting operator. Where possible, SingTel is required to upgrade its facilities to provide additional collocation space (it can recover the costs, over time, from interconnecting operators). Interconnectors can ask to inspect SingTel’s facilities in order to verify the incumbent’s claims of space limitations. SingTel can retain a portion of currently unused space to accommodate “reasonably projected rates of growth” for a two-year period, but it is generally not permitted to reserve excess capacity as a means of blocking collocation by other operators.

<sup>58</sup> In some locations in the world, line sharing may be known as “shared access” or may be viewed as synonymous with network unbundling itself. For greater detail on the parameters of local loop unbundling and line sharing in Singapore, see Appendix Two of the Code of Practice for Competition in the Provision of Telecommunications Service, which is available at <http://www.ida.gov.sg>.

“Essential support facilities” are defined as “passive support structures, for which no practical or viable alternatives exist, that enable the deployment of telecommunication infrastructure.”<sup>59</sup> In addition to collocation space, such facilities include manholes, cable chambers, trenches, ducts, and conduits, which SingTel must offer to lease to competitive operators so that they can place their own cables or fiber plant. SingTel must also give FBOs space within cable risers in commercial and residential multi-tenant buildings, where the majority of Singapore’s population work and live. Finally, competitors have the right to obtain space on SingTel’s towers and poles for the location of radiocommunications transmission equipment. Access prices must be cost-based and non-discriminatory.

Pursuant to the Telecommunications Act, IDA may find under the Code that certain infrastructure owned or controlled by a licensee should be shared with other licensees. IDA may designate infrastructure to be shared if it determines that the facility constitutes “critical support infrastructure” or that sharing is in the public interest. Facilities subject to sharing, at cost-based prices, may include masts, poles, towers, in-building cables, leaky feeder cables,<sup>60</sup> lead-in ducts and associated manholes. As the Code states:

For example, if one licensee controls a particular ‘leaky feeder’ cable for provision of radio coverage in the Mass Rapid Transit and road tunnels, and if IDA determines that the ‘leaky feeder’ cable is subject to sharing, the licensee would be required to allow other licensees to jointly use that infrastructure at a cost-based price.<sup>61</sup>

If an operator wants to share infrastructure, it must first submit a request to the owner of the facility to negotiate an agreement. The licensees can mutually ask IDA to assist in negotiations, but IDA will not impose any specific arran-

<sup>59</sup> Code of Practice for Competition, Appendix Two, Section 4.1.

<sup>60</sup> A leaky feeder cable is specialized cable plant that emits wireless signals that allow underground access to mobile phone networks or other wireless systems. Usually installed in a tunnel or subway system, it is analogous to a garden hose with holes punctured at certain points to allow water to stream through. The cable emits radio signals to provide wireless access inside the tunnels.

<sup>61</sup> See Code of Practice for Competition, Section 6.2.

gement on the operators during the initial phase. If no voluntary agreement can be negotiated, an operator can petition IDA directly to issue a ruling to force sharing.

#### 6.3.4.1 Interconnection Regulation Implementation

Before the drafting of SingTel’s RIO, StarHub and SingTel spent the better part of 1999 attempting to negotiate an interconnection agreement that would have governed what was to be their duopoly relationship in the basic services market. Negotiations were detailed and, at times difficult, with StarHub complaining that SingTel was forcing it to sign myriad separate and side agreements that resulted in fractured and confusing interconnection arrangements for various types of traffic. Eventually, IDA and the Ministry were forced to mediate between the parties.

The quick decision to go beyond the duopoly market structure in January 2000 forced an immediate rethinking of the entire competitive picture in Singapore. StarHub temporarily shelved its efforts to build its network out to residential subscribers until a financial package could be worked out with IDA and the Ministry to compensate it for the loss of its guaranteed duopoly competitor status. StarHub’s concentration on the central business district meant that its interconnection needs would, at least temporarily, be less extensive.

Then, Singapore entered an interconnection holding pattern as SingTel developed and presented its RIO for review by IDA. Competitive operators report that during the period when the RIO was pending, they could make little or no progress in negotiating interconnection agreements with the incumbent, which appeared to be resisting signing separate agreements with individual operators until it could be sure what the government would require it to offer in the RIO. With the RIO finalized in January 2001, the newly licensed competitors began the task of quickly and intensively examining the detailed document to ascertain what was in it for them.

By the end of April 2001, many of the FBOs had signed the RIO, after determining that, while the document did not offer everything on their wish list, it would provide them with what they

needed to enter the market and pursue their business plans. Certainly, most operators signing the RIO appeared to feel that going along with the document, at least in the short term, would be preferable to engaging in a long, drawn out negotiation process, with uncertain results. So it appeared that the RIO, intended as a lowest-common-denominator guarantee of baseline terms and conditions, might become a ceiling, as well as a floor, for what competitive operators could obtain from SingTel. By late April 2001, only two companies, New Call Communications Pte Ltd and Access Asia Telecom Pte. Ltd had negotiated individualized interconnection agreements with SingTel.

The widespread adoption of the RIO did not mean, however, that new operators in Singapore were confident that interconnection would proceed smoothly. While largely endorsing the RIO as a fair and equitable blueprint for interconnection, operators were anxious to see how SingTel would perform in the implementation stage. The true success of IDA's work to develop an interconnection framework – which was extraordinarily rapid and efficient by global standards – would depend on SingTel's compliance in provisioning interconnection. The real test of the RIO experiment, then, was whether IDA could hold SingTel to a high standard for delivery of services. Only time would tell whether SingTel and IDA could meet that test, operators said.

In addition, some non-dominant competitors have complained that IDA's refusal to intervene in interconnection negotiations between non-dominant operators (unless both operators agree) suggests that IDA may have abandoned prematurely its active involvement in issues that confront them, but which may not involve SingTel. At least some competitors believe that IDA should be more proactive even in the case of non-dominant operators. Falling back upon the Code, IDA has taken the view that it would be inappropriate for it to dictate interconnection terms. That has left non-dominant carriers, at times, unable to secure interconnection and unable to force their negotiating partners to come to terms.

#### 6.3.4 Preventing Unfair Competition

Under the Code, IDA can initiate an enforcement action to halt anti-competitive practices by dominant operators. Those practices might in-

clude predatory pricing to force competitors out of the market, "price squeezes" that inflate the costs for nonaffiliated operators that purchase inputs from the dominant carrier, and cross-subsidization. SingTel must follow rules that call for accounting separation and correct allocation of costs among different lines of business to prevent the use of revenues from noncompetitive businesses to subsidize competitive operations. A dominant carrier cannot provide its affiliates with access to its network facilities at preferential prices, terms and conditions not offered to nonaffiliated companies. Nor can a dominant carrier unreasonably alter the physical or software interfaces to its network in such a way as to impose costs or harm another network, without a legitimate business or technical reason.

#### 6.4 Equipment Approval, Property Access, Police and Other Functions

In addition to licensing authority, the Telecommunications Act gives IDA the following authority:

- to approve the use of telecommunications equipment and plant;
- to provide any "residual" services not being provided by private operators in the market;
- to enforce PTLs' rights to enter state and private land for the purpose of installation, provisioning, and maintenance of services or plant;
- to allow PTLs to make any changes in a site, including cutting of trees (in certain cases, with compensation to the property owner) necessary to protect its installations;
- to allow PTLs to work with property owners to ameliorate any interference to wireless transmission facilities;
- To direct licensees to share needed telecommunications infrastructure;

- to require all parties to warn operators and take precautionary measures before performing any digging or “earthworks” in the vicinity of buried telecommunications plant.<sup>62</sup>
- to represent Singapore in any “international business dealings,” including international traffic agreements and diplomatic accords (the Minister also may delegate authority for IDA to represent the country in international organizations and relations).<sup>63</sup>

The Telecommunications Act also sets criteria for enforcement, giving IDA and Singapore’s police agencies powers to prevent or shut down any operations by licensees that violate the Act or other regulations. The agency and policy also may take action to prevent or stop other parties from interfering with lawfully licensed telecommunications operations. Among other things, the powers granted to IDA include the powers of search and seizure and the power to obtain documents and other information from licensees.

## 6.5 Resource Management

### 6.5.1 Spectrum Allocations

IDA has the authority to allocate radiocommunications spectrum for both public sector and private sector uses. IDA collaborates with SBA for the latter to assign frequencies from the broadcast spectrum to broadcasters after IDA has decided on the national spectrum allocation for broadcasting service and cleared the technical operation for broadcast transmitters. There is a coordination committee for defense agency use that allows the defense forces to have a role in determining spectrum policy, but IDA retains control over national spectrum allocation.

Commercial spectrum is regarded as a valuable, finite resource. Where spectrum is a constraint, IDA can utilize either an administrative evaluation process or an auction to determine which companies receive spectrum rights to use the frequencies. Mobile service licensees pay fees to obtain spectrum and, like other facility-based licensees, they are then subject to an annual

license fee that is based on a percentage of their annual revenues (See Section 9 below).

Singapore has been careful to avoid flooding the market with spectrum for cellular mobile services, allowing existing licensees to build market share. With the three cellular licensees (SingTel Mobile, M1, and StarHub Mobile) having now achieved a mobile service penetration rate of more than 70%, they badly needed additional spectrum to add capacity to their networks. The three mobile operators submitted their requirements for additional 2G spectrum which have been approved by IDA. The licensees are now preparing “2.5G” data services, such as General Packet Radio Service (“GPRS”) offerings, to ramp up to full-fledged 3G services.

The domestic mobile service market in Singapore is flourishing, but with only 4 million residents, it remains a small geographic market relative to other Asian countries. Analysts cited that fact during the second week of April 2001, when IDA was forced to drastically alter its 3G licensing strategy. The agency had planned to hold an auction for four 3G licenses. But at the last minute, the only outside bidder, Sunday Communications Ltd of Hong Kong, withdrew from the auction, having failed to submit the required bank financing guarantee. That left only three bidders – the incumbent Singaporean 2G licensees – as contenders for the three licenses, negating any need for an auction. As a result, IDA announced on 11 April, 2001, that it would simply allow the incumbents to receive the 3G licenses, in return for a payment of SGD 100 million (roughly USD 55 million).

The relatively low license fee – coupled with a fairly limited geographic area – will result in lower capital costs for 3G network build-outs in Singapore, particularly when compared to capital costs that major wireless operators are facing in Europe and potentially elsewhere in East Asia. All of the 3G licensees plan to roll out networks employing the Wideband-CDMA (W-CDMA) protocol, according to the operators. IDA’s allocation for 3G spectrum will require M1 to migrate its current 2G CDMA network users out of the current spectrum block it is using for CDMA service, and to shut down Singapore’s only CDMA network. M1 sought financial compensation for this forced reallocation but succeeded only in obtaining new

<sup>62</sup> IDA is empowered to license “cable detection” workers that will locate and mark buried lines for a fee, thus avoiding accidental severing of cables and disruption of service from excavation work.

<sup>63</sup> See Section 7.2.3 below.

spectrum to preserve its overall capacity. IDA persisted with its plan to close the book on 2G CDMA in Singapore.

### 6.5.2 Numbering

Singapore is unlike many countries in that its small size essentially negates the need for an inter-city or national numbering plan. Calls are either local or they are international. There is a thriving and competitive international direct dial (IDD) market, which allows callers to dial a short prefix to gain access, on a per-call basis, to their carrier of choice (the operators sign up callers as subscribers, even though they must dial the prefix each time they make an international call). Local calls are made through a seven-digit dialing plan. In March 2002, IDA will introduce eight-digit dialing, to make way for the plethora of new mobile phones, faxes, and other devices now being added to the network. For existing numbers, callers will simply have to add one digit (“6”) before dialing the number.

### 6.5.3 Building Access

One of the most difficult barriers facing some nondominant FBOs has been the difficulty in obtaining prompt access to distribution points and riser space in office buildings and multi-tenant residential buildings. In Singapore, where the vast majority of commercial and even residential customers are to be found in multi-story edifices, building access is crucial to most business plans. Such access is governed by a separate code of practice, but operators and even IDA staffers have reported that many landlords remain either ignorant or defiant of the law that requires them to provide access to licensed telecommunications providers.

At least one operator reported problems with landlords that appeared to be trying to extort inflated payments or fees from the operators in return for building access. There are suspicions that some landlords are putting up barriers to access because they intend to set up their own telecommunications companies to take advantage of the relationships and access they have to customers living and working in their buildings. IDA has issued several directives informing building owners of their legal responsibilities. But one operator said compliance remains slow, and some building owners continue to erect

technical and financial roadblocks whenever they can.

## 6.6 Broadband Policy

Licensing policy is designed to be technology-neutral, and IDA’s entire reason for being lies in the perception that convergence is a fact of life and the wave of the future in the info-communications industry. However, IDA continues to regulate traditional circuit-switched telephony differently from packet-switched data or broadband services. For example, while there is a detailed framework for telephone network interconnection, IDA does not mandate peering or regulate either transit payments among ISPs or the commercial relations of ISPs at Internet exchange points, although the Authority has facilitated discussions among operators to bring about peering arrangements.<sup>64</sup> Moreover, as previously noted, while SingTel must unbundle its local network, SCV has been explicitly exempted – at least for the meanwhile – from any requirement to give rival ISPs access to its cable modem platform. Finally, while telephony is subject to a single, unitary regulatory regime administered by IDA, Internet services remain subject to a bifurcated system of review and registration by both IDA and, for content issues, SBA.

Full regulatory convergence, then, is a mission that has not yet been completed. In this sense, the picture in Singapore resembles that in many, if not most, other countries, where regulatory and legal frameworks have not been converged either in part or in whole.

The difference may be that in Singapore there is a tool in place to respond to growing convergence: a technology-neutral Competition Code with a built-in review mechanism. For example, IDA has indicated that it expects to modify its implementation of the Code to require SCV to provide access to its cable modem platform at the appropriate time.<sup>65</sup>

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<sup>64</sup> There is no law or prohibition in Singapore against the provision of IP-based telephony over packet-switched networks.

<sup>65</sup> This has become even more likely given the planned merger of SCV and StarHub, given StarHub’s network buildout requirements.

Singapore also has developed a clear policy objective to re-align policy to accommodate convergence, and the issue remains under study on several fronts. The result may well be convergence legislation, according to MCIT. It is important to note that the result may not be just the extension of existing telephony regulatory models to cover packet-switched networks. Rather, the intent may be the reverse: to reduce regulation, over time, on all network technologies, allowing competition and the search for efficiency to speed the migration toward broadband, packet-switched networks that can be used to offer all services and applications.

Meanwhile, some operators feel that IDA has not done enough, or moved rapidly enough, to force down wholesale tariffs that SingTel charges for dark fiber or international private line circuits. While they praise the decision to force SingTel to offer wholesale rates at all – a decision bitterly opposed by the incumbent – they suggest that the rates are still too high and may not be competitive with rates available in other markets around the region and globally. Several operators were planning to land additional international facilities during the summer and fall of 2001, however, and the resulting competition could force rates down below current levels.

## 6.7 Antitrust Concerns and Merger Reviews

In many countries, telecommunication regulatory agencies often work closely with competition (antitrust) authorities to ensure that business combinations in their sector do not reduce or eliminate fair market competition. Singapore, however, does not have a government office or statutory board devoted solely to antitrust reviews and enforcement. Therefore, within the info-communications sector of the economy, IDA is the front-line agency charged with reviewing proposed mergers and acquisitions to ensure that they proceed on pro-competitive terms. IDA has the right to attach conditions to the license of any new operator formed through such a merger.

At the time of writing, IDA was preparing for the biggest test of its merger review authority to date. In late April 2001, SCV and StarHub announced that they were discussing terms for a merger, which would create a consolidated

company with mobile service, corporate telephony, cable TV, and broadband Internet access offerings. A merged company, analysts noted, would be able to compete more effectively across all service markets with SingTel, which was active in all of those markets, except cable TV.

On 14 June 2001, IDA agreed that the consolidation would satisfy the network build-out requirements imposed on StarHub, which must extend its network throughout residential and commercial areas, beyond the central business district where it now operates.<sup>66</sup> At the time of the writing of this case study, IDA had not yet ruled on the issue of whether a StarHub merger with SCV would concentrate too much market power in too few domestic network operators.

## 7 Internal Organization and Operations

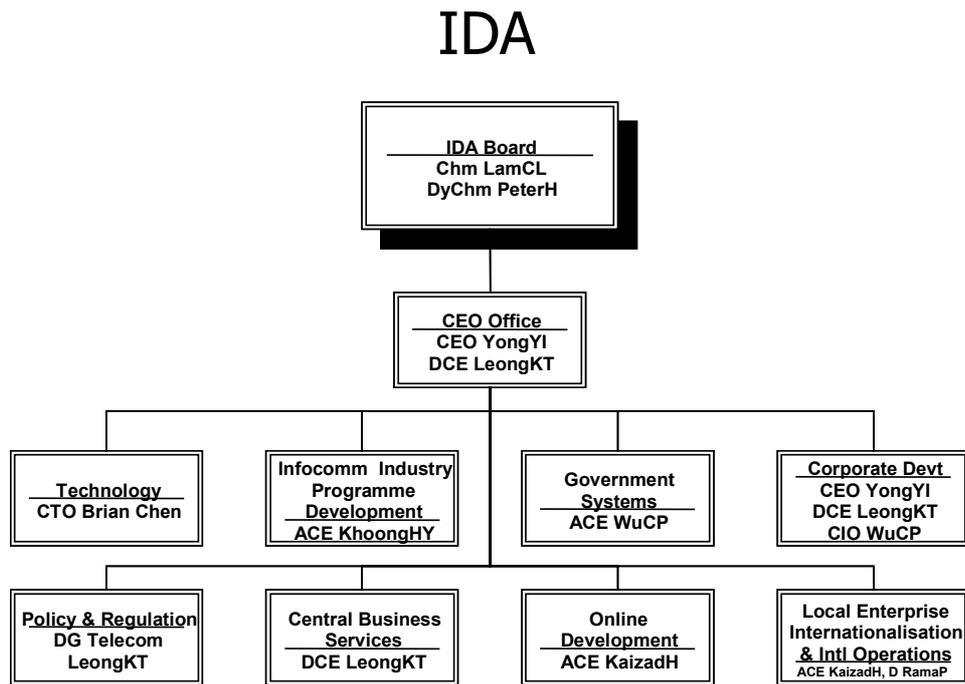
### 7.1 The Organizational Chart

IDA's organizational chart (See Figure 7.1) somewhat resembles that of a corporation, with a centralized top management structure and several operating units. There is a Management Committee, which meets regularly and includes the Chief Executive Officer, the Deputy Chief Executive, and six other executives, who supervise one or more of the operating units within IDA. The senior management team reports to the Chairman and the Board, which constitute the statutory authority under the IDA Act. However, as discussed in Chapter 5, the Chairman and the Board have delegated the responsibility for all day-to-day operations and regulatory decisions to the management team.

It should be noted that the organizational chart of IDA has not been a static structure. The agency has continually revised the chart in an effort to clarify roles and update the structure to reflect its ongoing evolution and consolidation. For example, IDA posted a new organizational chart on its website to reflect changes made as of April 16, 2001; the previous chart had been in place only since January 1, 2001.

<sup>66</sup> See IDA Media Release 14 June 2001 at [www.ida.gov.sg](http://www.ida.gov.sg)

Figure 7.1 – IDA’s Organizational Chart



Source: IDA, April 2001.

Essentially, however, IDA’s internal organization is broken down into operating units headed by a Director General or Assistant Chief Executive. These groups can be categorized according to their roles in pursuing IDA’s three basic missions. Those are:

- 1 Regulating the info-communications industries.
- 2 Promoting and fostering the development of info-communications industries and markets in Singapore.
- 3 Operating the computer systems and networks of Singapore’s government entities.

In addition, there is a Central Business Services unit that provides administrative support for all other units and contains, for example, the public relations office and press office of the agency. The Central Business Services unit is charged with studying and forecasting trends in the industry and coming up with plans for IDA to meet those challenges and manage those trends. There also is a small Corporate Development office and a CEO’s office that provide operations support for the senior management and attempt to coordinate efforts to improve the agency’s overall operations and effectiveness.

The roles and functions of each of the major operating units is described below.

## 7.2 Policy and Regulation

The primary responsibilities for generating regulatory policies and implementing them belong to the Policy and Regulation Group, which currently is headed by Director General (Telecoms) Leong Keng Thai, who also is the IDA’s Deputy CEO. Through Mr Leong, the policy and regulatory functions of the agency maintain a crucial and important role in the agency. (See Figure 7.2)

The Policy and Regulation Group is divided into three divisions: (1) the Regulatory Division, (2) the Policy Division, and (3) a small Legal Division. At the time this case study was being prepared, the Group’s three divisions reported to a single manager, Andrew Haire, the Senior Director of the Regulatory Division. Senior Director Lee Mei Poh had just been appointed Senior Director for Policy and Chief Legal Counsel. The Legal Division was expected to remain a small office, reflecting the overall lack of emphasis on litigation at IDA (and indeed, throughout Singapore – See Section 8.1).

**Figure 7.2 – IDA: The Regulator and Policy Maker**

There are three main operating units of IDA involved in policy and regulation.

The 110-person policy and regulation group is divided into three divisions:

- The Policy Division
- The Regulatory Division
- The Legal Division

The 28-person Central Business Services Group includes two units that take an active policy-development role:

- The Strategic Planning Division
- The International Division

**7.2.1 Policy Division**

The Policy Division has two sub-units, one in charge of info-communications policy development and the other charged with developing policies for market access and competition. The Policy Division works to formulate the general policies that IDA will apply to implement the principles and mandates of the Telecommunications Act and its subsidiary legislation, the codes of practice. It develops the broad directions and approaches that IDA will take regarding the whole range of issues and activities that IDA must oversee as the regulator.

The info-communications policy unit particularly addresses “convergence” industries, such as Internet access. It is on the forefront of drafting and coordinating policies to deal with cutting-edge issues. For example, the unit was instrumental in dealing with an issue involving online auctions. In Singapore, entities have always had to obtain a license before attempting to hold actual, physical auctions. This posed a problem, and a potential barrier, for entities trying to enter the market for cyber auctions. Ultimately, with IDA’s leadership, the government dispensed with the standard licensing process for online auctions. Other issues of cyber policy that the unit has addressed involve:

- Online gambling and potential issues of vice or corruption;
- Implementation of the Electronic Transactions Act, which gave legal status to digital signatures;
- Protection of data through encryption;
- Conforming to Singapore’s pledge not to impose new taxes on electronic transactions

(pre-existing taxes on the sale of goods and services were not affected); and

- Whether and how to protect ISPs from liability for content or material they may convey as passive carriers of traffic.

The market access and competition unit, meanwhile, handles policy development related to the authorization of full competition in Singapore’s market. This unit is particularly concerned with conforming agency policy to the code of practice for competition and providing the agency with clear direction and the tools to enforce the code. The goal is to continue restraining the ability of dominant operators to harm the market and establish an environment that will be conducive to the operation of market forces.

**7.2.2 Regulatory Division**

Where the Policy Division has a policy-making role, this division handles the obverse side of the same coin: implementation. This division is the core regulatory division of IDA, in that it handles the crucial regulatory activities such as enforcement, tariff review and responding to operators’ queries or complaints about their own practices or other operators’ behavior.

There are three units within the Regulatory Division: (1) the Economic Regulation unit, which handles pricing, market behavior, market entry and exit and consumer protection issues; (2) the Interconnection unit; and (3) the Technical Regulation unit, which handles resource

allocation (e.g., spectrum allocations and usage and numbering) and building access issues. The Regulatory Division, the largest within the Policy and Regulation, constitutes the “front lines” of regulatory practice in Singapore. It works closely with the Policy Division, with the two roughly serving as right and left arms of regulatory policy formation and implementation for IDA.

The Legal Division serves to advise the other two divisions concerning the conformance of policies and actions to info-communications-related legislation and the codes of practice. It is expected to remain the smallest of the three divisions within the Policy and Regulation Group.

### 7.2.3 Strategic Planning and International Units

In addition to the Policy and Regulatory Group, there are other units that are vitally involved in IDA’s development of policies – particularly long-range policies and goals. Although technically within the Central Business Services Group, these units are essential actors in the agency’s overall regulatory and policy activities. They are headed by a single Director, William Hioe, who reports directly to the Director General of the Policy and Regulation Group, Leong Keng Thai.

The Strategic Planning Division is charged with the task of studying the emerging trends within the info-communications industries. It tries to spot and track technologies and market developments that may be as much as five years away from having a direct, daily impact on those industries. In effect, then, the division is something like an in-house “think tank” for IDA and must contain the most forward-thinking theoretical minds the agency can find. The division also

contains IDA’s statistics office, which keeps tabs on all of the vital signs that point to the health and growth of Singapore’s info-communications industries and companies.

The International Division represents IDA (and therefore Singapore) at international conferences, in bilateral negotiations and relations with other countries, and within international organizations such as the ITU and ASEAN (the Association of South East Asian Nations). The division promotes Singapore’s interests in the development of telecommunications policy internationally. For example, it was instrumental in stating and supporting Singapore’s interest in developing more global parity in the charging structure for Internet backbone facilities. In this sense, the division has a diplomatic role, representing Singapore’s telecommunications expert agency and coordinating its international profile and activities.

### 7.3 Promotional Groups

Another major mission of IDA is to promote the development of info-communications within Singapore. IDA does this, in part, through organized and well-funded programs to proactively subsidize and sponsor technologies and even individual companies. Promotional activities cover the gamut, from technology fairs and expositions to providing seed money for a company’s research and development efforts. In general, the promotional efforts can be grouped into three categories: (1) Outreach to residents and companies to promote their extensive and efficient use of information and networking technologies; (2) promotion and development of Singapore’s info-communications industry itself; and (3) outreach beyond Singapore’s borders to stimulate investment and provide an outlet for exports. (See Figure 7.3)

#### Figure 7.3 – IDA: Info-Communications Promoter

IDA’s promotional efforts include outreach to residents and companies to promote their use of information and networking technologies, the promotion and development of Singapore’s info-communications industry and outreach beyond Singapore’s borders to stimulate investment and provide an outlet for exports. Three main groups, totaling 138 people, perform IDA’s promotional functions:

- The Online Development Group
- The InfoComm Industry Programme Development Group
- The Local Enterprise Internationalization and International Operations Group

### 7.3.1 The Online Development Group

This group's job comprises the first prong of Singapore's promotional strategy, turning Singapore into a "knowledge-based economy". The group specializes in fostering the take up, by residents and companies alike, of the best and most efficient computing and networking technologies and applications. This may include promoting e-commerce applications, promoting the "culture" of cyberspace throughout society, increasing usage of Singapore ONE applications, and generally coordinating the use of information technologies as a tool to leverage overall economic growth.

This group also includes the Manpower Development Division, which pursues programs designed to bolster the ability of Singapore to produce workers with info-communications technology skills. The Division has pioneered close working relationships with universities and technical schools, as well as partnership programs with industry to develop talents and skills for jobs and occupations targeting industry's needs.

The E-Lifestyle Marketing Division seeks to "make info-communications technology an integral part of the lives of Singaporeans." The chief application of this goal appears to be in programs for "mass training" of residents to use information technologies. The unit also holds "road shows" and sets up permanent exhibits in Singapore to show people how to incorporate new technologies into their lives to improve their quality of life.

### 7.3.2 The InfoComm Industry Programme Development Group

This group focuses more narrowly, on the information technology and telecommunications industries themselves. It is responsible for developing the nation's info-communications sector, including its network infrastructure and content

production capabilities. The prime directive is to transform Singapore into a communications hub in Southeast Asia, through direct and targeted programs to spur innovation and industrial competitiveness. The Group focuses on three areas of the sector: telecommunications, software and information technologies, and broadband networks and content.

For example, in looking at the future of the wireless industry, the Group performed a study on what would be the "killer applications" for mobile data offerings in Singapore, looking at location-based advertising or services, "m-commerce" (electronic commerce in a mobile environment), and others. In addition, the Group will sponsor a "co-funding" program for mobile data technologies, identifying companies with innovative ideas and providing money to help incubate and research those ideas until they are ready to be introduced into the market.

In the area of broadband development, the Group provided funding support and played a leadership role (inherited from NCB and TAS) in IDA's stewardship and co-ownership of Singapore ONE's 1Net network. When IDA's stake in 1Net was sold, the proceeds were returned to IDA's reserves for use in further promotional operations.<sup>67</sup>

The Group has also developed a "one-stop shop" for foreign market entrants attempting to negotiate the various national and local application and approval processes for building international gateway and cable landing facilities. This effort stemmed from discussions with international operators designed to smooth the way for their entry – itself a natural progression from IDA's international marketing efforts to stimulate investment.

Finally, the Group was instrumental in the fact-finding visit to the United States in 1999 that led to the decision to accelerate the advent of full competition by two years.<sup>68</sup>

<sup>67</sup> See Section 3.3 above.

<sup>68</sup> See Section 4.1 above.

### 7.3.3 The Local Enterprise Internationalization and International Operations Group

This group handles IDA's efforts to work beyond the borders of the country to help develop Singapore as an international hub or center of information technology development. The group seeks to take advantage of Singapore's historic linguistic and ethnic ties to China and India, which are perceived to be tremendous markets for high-value exports of technology and products developed in Singapore. In addition, the Group maintains outreach offices in Bangalore, India, and in the "Silicon Valley" area of Northern California, the center of the U.S. software industry.

### 7.4 Government Systems and Technology Groups

In addition to regulating and promoting the industry, IDA runs the government's computer systems. Over half of all employees in the agency work for the Government Systems Group. This unit is primarily composed of a legion of IT and computing specialists and technicians who are assigned to work on-site in the various government offices. Thus, this Group functions less as an integrated unit than as a

corps of IT professionals that are dispersed to work in support of general governmental functions. (See Figure 7.4)

Separate from the Government Systems Group is the Technology Group, which is staffed by engineers and specialists in technical protocols and equipment development. This group's task is to ensure that Singapore's government, institutions and industry remain on the cutting edge of communications technologies. It plays an important strategic role in analyzing and monitoring the trends and development of information technologies, as well as promulgating and encouraging the adoption of information standards in Singapore. It also provides technology support and consulting services to various initiatives and programs managed by IDA.

Finally, the Technology Group plays an active role in monitoring network security and ensuring a robust national infrastructure for Singapore. The latter function involves a small but dedicated group of government hackers, whose job is to attempt to defeat the security systems maintained by Singapore's government agencies, including those related to national security. The team attempts to find holes and lapses in security mechanisms, encryption, and firewalls – before anybody else does.

#### Figure 7.4 – IDA: IT Manager

IDA also maintains a corps of 504 IT professionals who run the government's computer systems. While these professionals work on-site in various government offices, they all report to one IDA group:

- The Government Systems Group

#### Figure 7.5 – IDA: Info-Communications Analyst And Security Monitor

IDA's 49-person Technology Unit serves an info-communications analyst, consultant and security monitor. The professionals in this group:

- Analyze and monitor trends in info-communications technologies
- Promulgate and encourage adoption of info-communications standards
- Provide technology support and consulting services for IDA programs
- Monitor network security

## 7.5 Promotion and Regulatory: Conflict or Complement?

Officials of MCIT and IDA acknowledge that the degree to which industry promotion and industry regulation functions are combined within the same agency in Singapore is rare, by global standards. As stated earlier, from the Singaporean perspective, promotion and regulation are simply two paths to the same objective: creating an environment that supports a vibrant, competitive industry and transforms Singapore into an info-communications hub for the region.

Still, the juxtaposition of promotional groups and regulatory groups under the same senior management poses questions about the pre-eminence of one over the other when interests conflict. For example, will IDA be able to make hard regulatory decisions to protect consumers when those decisions may negatively impact the industries and companies that IDA itself is trying to promote? Will IDA end up promoting and championing industry players or innovative projects for which no real demand or market exists? Conversely, when it comes time to allocate subsidies for “co-funding” projects and other promotional purposes, will there be internal pressure to reward companies that have been more compliant with IDA’s regulatory policies, or “punish” those that have opposed its decisions? Is there a chance that IDA will be perceived as adopting a biased approach toward industry segments or companies (such as Singapore-based companies) that it favors for promotional reasons?

Officials acknowledge that at times, there may be some creative tension between the goals of the promotional groups and existing regulatory practices. However, they foresee no serious conflicts of interest that would compromise either the regulatory or promotional capabilities of IDA. When conflicts or differences arise, officials maintain, they can be worked out to the benefit of all stakeholders.

Companies sometimes use their contacts with IDA’s promotional offices to complain about regulatory practices. At times, promotional staffers have taken complaints received from the industry and presented them to staff members in the Policy and Regulatory Group. Together, the promotional and regulatory staffs have attempted to work out solutions that would reduce regulatory barriers and burdens on the compa-

nies without compromising effective regulation. Staffers point out that this process can often result in streamlining reforms that make things easier for operators (a key promotional aim), while preserving or even improving their information-gathering and enforcement tasks. As an example, they cite the efforts to provide a one-stop, coordinated process for FBOs to research and obtain approvals for installing international facilities. The foreign operators can now get help in negotiating Singapore’s bureaucracy, and the government can now have a greater expectation that all the appropriate approvals and permits will be applied for and obtained, in good order and in a timely manner.

This kind of creative solution is what may make Singapore more competitive, in real terms, for international companies shopping around for the best investment environments.

With regard to the issue of distributing funding allocations to companies, IDA regulatory and promotional staffers say there is very little room for influencing the process. Regulators have no say in which companies receive funding. Companies seeking funding are required to submit an application. The applications are submitted to separate units within IDA who make the award decisions based on neutral and specific criteria set in advance.

Operators report no serious concerns about the possibility that bias may creep into IDA’s actions because of the confluence of promotional and regulatory activities. IDA has used subsidies to develop innovative new services or strategies that generally help to “float all boats”.

It should be noted, moreover, that many governments maintain promotional programs to help develop their telecommunications and computing industries. Even if these programs are institutionally separated from the independent regulatory agency, there may be tensions over the pre-eminence of industrial policy or regulation within the government as a whole. Indeed, where industry development offices remain within a government ministry, they may have a relatively stronger political position than that of a newly established, institutionally weak regulatory agency. If the ministry in question retains a close relationship with the incumbent operator

(including a lingering equity tie), the regulatory agency could, indeed, face political resistance in attempting to impose a strict regulatory structure on that incumbent.

## 8 Staffing and Personnel

### 8.1 Staffing and Allocation of Staff

Out of 934 total IDA employees only 110 are assigned regulatory and policy duties, with an additional 28 from the Central Business Services devoted to strategic planning and representing IDA and Singapore in international telecommunications organizations such as the ITU. Another 138 employees work in units devoted to industry promotion and market development, including the InfoComm Industry Programme Development Unit (67)<sup>69</sup> and Online Development<sup>70</sup> and Local Enterprise Internationalisation and International Operations Unit (71).<sup>71</sup> In terms of the two main functions of regulating and promoting the info-communications industry, the balance – at least in terms of staffing – is tipped slightly in favor of the latter.

Five hundred and four employees are assigned to various government agencies and offices, where they work as IT managers and technicians to various government agencies and offices as part of the Government Systems unit.<sup>72</sup> Another 49 work in the Technology Unit, monitoring trends and network security and working to promulgate info-communications standards.

In addition, 23 work in corporate communications; 58 provide administration, human resources and real estate while the Corporate Development unit, providing operations support, has a staff of 24. The remaining complement of staff works in the CEO's office.

Fifty three percent of the total IDA staff is women, and women comprise 48.6% of the professional staff. A woman holds the most senior position in the organization, that of the Chief Executive Officer. Although only one of the senior directors is a woman, women are well

represented at the director, deputy director and assistant director level.<sup>73</sup> Moreover, in keeping with the cutting-edge nature of the industries IDA regulates, the staff is predominantly young; one senior official estimated the average age as “well under” 30.

The large majority of IDA's professional staff have backgrounds and training in either engineering or information technology. Fully 35% of the staff consists of engineers, and another 35% have IT backgrounds. A further 20% of IDA's staff is classified as having a business background, and 9.99% are classified as economists.

Surprisingly, there are very few attorneys working at IDA. In fact, the agency reports that attorneys constitute just 0.002% of its professional staff. This is the case, despite the fact that IDA's regulators must routinely interpret and apply the legal documents – including the Telecommunications Act and the codes of conduct – that underpin all regulatory activity. Again, while IDA recently appointed a Senior Director for Policy and Chief Legal Counsel, the staff of attorneys working in the Policy and Regulation Group was not expected to grow beyond a small handful.

Asked why there were so few attorneys, IDA officials cited the growth of competition (which IDA expects to obviate the need for strict regulation in a few years), the desire to maintain flexibility and avoid overly legalistic responses to market issues, and the overall lack of emphasis on litigation in Singapore. Indeed, the paucity of lawyers at IDA appeared to be reflected in the staffs of the operators' regulatory offices, which also contained few lawyers.

### 8.2 Staff Compensation

As a statutory board, IDA is free from the constraints on hiring, firing and benefits policies that affect the civil servants employed by MCIT and other line ministries of the Singapore government. This freedom allows IDA to establish compensation packages that are commensurate with what its employees would receive if they went to work in the private sector. In addition,

<sup>69</sup> See Section 7.3.2.

<sup>70</sup> See Section 7.3.1

<sup>71</sup> See Section 7.3.3.

<sup>72</sup> See Section 7.4

<sup>73</sup> For example, IDA is frequently represented at major ITU conferences by Valerie d'Costa, Director, International Affairs.

the agency provides two kinds of bonus programs for its employees. One program allows workers to receive pay that is adjusted slightly to account for increases in the cost of living (a key concern in Singapore, particularly regarding housing and automobile costs). The second provides much larger, incentive bonuses paid at the end of the year, for staff members who perform well during the year. Eighty percent of staff members benefit from such bonuses. As an additional component of their bonus package, IDA staff members also receive an amount pegged to the performance of the info-communications sector in Singapore.

Despite having a competitive remuneration system, IDA acknowledges losing more than a fifth of its trained workforce annually. This significant rate of churn appears to be a problem affecting many government agencies and ministries, as officials outside IDA confirmed. As more and more operators and IT-related companies enter the market (resulting from IDA's own policies and efforts), the agency expects to have to continue to work hard to retain its staff and attract new workers to replace those that are wooed away by the industry.

### 8.3 Recruitment and Training

IDA's efforts to recruit and retain qualified staff members should be understood in the context of Singapore's overall effort to fuel the acute and growing demand for trained workers and professionals in the info-communications sector. Singapore has a full-time Manpower Ministry, which seeks to coordinate and promote recruitment and training efforts to meet that demand. IDA works with that Ministry, as well as the Economic Development Board, to assess and address the country's ongoing IT labor needs. IDA and MCIT estimate that as a result of telecommunications liberalization, some 4,000 to 5,000 new jobs have been created in Singapore.

With demand increasing, Singapore is likely to see a shortfall of 2,000 to 3,000 info-communications workers each year for the near future, even with its efforts to focus on training and education. The country's poly-technical schools and universities simply will not be able to generate enough new graduates in the field to keep up with labor needs, under current estimates. In response, Singapore has tried to bolster its domestic manpower programs with

measures that ease the process whereby foreign workers obtain permits to live and work in Singapore. To avoid a situation in which foreign workers simply go to Singapore to obtain the training they need, and then depart, taking their training home with them, Singapore offers highly qualified professionals the carrot of shortening the time needed to qualify for permanent resident status.

IDA officials indicate they are able to find and recruit qualified regulatory personnel, based on a number of factors including a good working environment, service in the public sector and a compensation package that is sufficient to attract qualified regulatory personnel. In addition, the agency provides funds for staff members to take courses in order to bolster their training and educational levels.

## 8.4 Outsourcing

Still, IDA's regulatory staff seeks outside expertise in certain key areas, including legal services. IDA has secured the services of outside consultants, particularly from the United States, for several major regulatory tasks, including the drafting of Singapore's code of practice for competition and the evaluation of costing methodologies for interconnection. Because of the lack of legal expertise within IDA, the agency was reliant on outside attorneys to advise it on how to draft the core legal instruments that the IDA staff will use to regulate operators in a competitive environment. In addition, IDA seeks data from outside the country, including rate levels for certain services, to use as benchmarks for its own regulatory actions, although it does not publish this information itself.

### 8.4.1 Intra and Inter-Agency Committees and Virtual Teams

Between and among these agency operating units – and in fact, between IDA and other government agencies – there are an array of both formal consultation groups and informal working groups. Within IDA, the Management Committee, composed of the eight top executives meets each week, and on a middle-management level, there is a Directors' meeting, involving heads of units and divisions across IDA, that meets twice a week.

In addition, there is a fairly frequent utilization of “virtual” teams or task forces, which are formed to pursue resolution of a single issue or set of issues that may require input from specialists in various operating groups. Usually, these groups will meet once or twice, initially, to frame the issues and decide how they will allocate and pursue various tasks. After that the group may “meet” only through strings of emails or tele-conferences, making use of the various technologies IDA is charged with regulating and promoting.

In some cases, when groups within IDA (most often the promotional groups) wish to seek outside input, they will put together a board or committee composed of academics, industry executives, or professionals, to serve as an advisory or consultation body on a particular set of issues. The board, which may be international in scope, will have no decision-making power but will provide input seen as crucial for shaping the eventual policy outcome. International advisory panels are perceived as particularly important to solicit professional or theoretical expertise in areas where domestic expertise is seen to be lacking (such as specialized legal or technical expertise). These panels may also serve to build-in consensus of industry or international players that may be instrumental to the success of efforts to implement the eventual policy solution.

There are several multi-agency committees, both standing and ad hoc, that bring together representatives of allied ministries and statutory boards to oversee government-wide initiatives and tasks. One example is the spectrum coordination council that exists to prevent or resolve frequency interference. A legacy of British colonial rule, the council also includes government representatives from Malaysia and Brunei.

All of the intra-agency and inter-agency government and industry committees and task forces play a role in developing and maintaining consensus in Singapore’s consensus-based political system. More than in perhaps many other countries, policy-making is seen not as a “turf” battle between different government agencies, but as a collaborative, consensus-building process, in which each player has a role in implementing policy in the interests of the government and society as a whole.

## 8.5 Staffing Issues Arising From The Merger of TAS and NCB

When IDA was created in December 1999, it became an agency with more than 800 staff members. Initially, the staff members were divided between the former offices of TAS and NCB. During 2000, the merged agency moved into combined offices at a single location.

The goal was to combine two organizational cultures, one embodying a regulatory approach, and the other involving a marketing and promotional one. The top-level IDA managers hoped to cultivate a single ethos, in which regulation and promotion were viewed as two paths to a single objective: providing a catalyst for private industry to build a vibrant, competitive, and converged info-communications market.

Even before the official merger, the two agencies began consolidating their leadership, holding joint training sessions, off-site planning “retreats” and, in some cases, working jointly as members of a single team in an effort to integrate the two agencies following the announcement in March 1999 of the “likely merger of NCB and TAS” by Finance Minister Dr Richard Hu. This work was all done with the backing and supervision of the government.

After a little more than a year in existence, IDA is still working to integrate its staff and develop the common ethos it seeks. Top officials note that much progress has been made in that regard. Integration has been most successful – and is essentially complete – among the previously separate units that undertook promotional functions within TAS and NCB. The overlap between the two agencies in the promotional field has been eliminated. Both the government and the industry now can look to a single agency as a source of funding and help on all communications technology issues.

## 9 Financial Resources

### 9.1 Operational Budget

IDA has a significant degree of financial independence through its status as a statutory board. IDA’s revenue sources differ depending on which facet of IDA’s operations is being funded. The revenue sources are broken down as follows:

- Regulatory and policy-making operations are completely funded through regulatory fees for licensing, spectrum and numbering;
- The operating budget of the promotional groups is funded through a government grant;
- Government Systems operations are funded through contracts with the individual agencies where the unit's employees work.

In practice, the total amount of regulatory fee revenue usually exceeds the budgetary needs of the regulatory and policy-making units. In that case, the excess funding is transferred to help fund the operations of the promotional groups.

In fiscal year 2000, IDA's operating budget totaled approximately SGD 130 million (approximately USD 71 million). Of that amount, about 40% of the total revenues, came from contracts to cover Government Systems operations. Forty-seven percent came from license fees. And there was a government grant of about SGD 20 million for the operation of promotional programs. However, because the direct costs for regulatory operations were only SGD18 million to 20 million, a large share of incoming monies from license fees were allocated to help fund promotional and developmental activities, which amounted to about SGD 30 million in direct costs. The remaining budgetary allocations were used to cover other operational costs.

While IDA is able to cover its own costs, it is not generating a budget surplus. This situation is likely to continue since IDA recently reduced the annual license fee levied on most licensees from 3% of annual turnover to 1%.

## 9.2 Grant Money for Promotions

In addition to the operating budget, IDA can allocate in excess of SGD 500 million in funds that have accumulated from government grants for promotional and strategic investment programs. These funds are kept separate from IDA's operating budget.

## 9.3 Assets

IDA has the authority within the IDA Act to own property and manage and make investments, although it has taken steps in recent years to minimize any such activity. It can also

raise money through borrowing, if it needs to. For example, the current offices, in eight floors within Tower Three of the city's well-known, high-rise Suntec Centre, are secured by a four-year lease. IDA also invests in its own capacity in strategic industries in order to assist the development goals of IDA. The goal of the investments is not to generate income. In the current investment climate, however, IDA has scaled back its investments in securities, although it continues to obtain interest from cash deposits.

## 9.4 Regulatory Fees

Notwithstanding IDA's drive toward technology neutrality, the fees that operators and service providers pay in Singapore may vary depending on what kind of license the operator has, or even what kind of service the company provides. In 2000, IDA sought to clarify the fee structure by adopting a new policy of requiring FBOs and SBOs with individual licenses to pay a yearly fee calculated at one percent of gross turnover.

However, the one percent did not apply to cellular, "mobile broadband multimedia," and "fixed wireless broadband multimedia" licensees, which utilize radio spectrum and are therefore considered a scarce public resource. Fees for licenses that employ radio spectrum comprise three components: service license fees for either FBOs or SBOs, radio-frequency fees and radio-station fees. The fees for the latter two components are detailed in the Second Schedule to the Telecommunications (Radiocommunications) Regulations 2001. In addition, during the spring of 2001, the mobile service incumbents were required to pay SGD 100 million each for their 3G licenses.

While there is a consistent yearly fee of one percent of annual turnover for most other FBOs and individually licensed SBOs, IDA has set various minimum fee thresholds. FBOs designated as PTLs, for example, must pay at least SGD 250,000, regardless of actual turnover, while other FBOs must pay a minimum of SGD 100,000. The minimums imposed on other operators are far lower. For example, SBO individual licensees must pay at least SGD 10,000 annually, while SBO class licensees pay just SGD 200 every three years, when they renew their service registrations.

## 10 Transparency and Fairness

Transparency is a means of ensuring fairness in the regulatory process. The principle of transparency translates into the practice of making regulatory decisions in an open, objective manner that allows regulators to explain the reasoning behind their decisions and to be held accountable for their actions. Transparency not only helps the public and the regulated industry, it can help the regulators as well. Transparency allows regulators to gain information and consult all stakeholders, thus building some political consensus for their decisions. It also allows regulators to justify their actions by citing the facts provided to them and by making cogent arguments that those actions will serve the public interest. Transparency may inoculate regulators from charges that they have rendered arbitrary decisions, behind closed doors, for reasons of personal gain or to benefit a certain company.

Transparency is growing in Singapore as the info-communications market becomes more complex and as the country's regulatory framework becomes increasingly codified. There is a growing recognition, at high levels within IDA, of the value of transparent processes, particularly in the realm of public consultation. This has arisen, despite a political and cultural tradition in Singapore that calls for cooperative dispute and conflict resolution outside the public eye. Yet, while operators view IDA as a credible, fair decision-making body, they do not always know how, or by whom, decisions are made.

### 10.1 Regulatory Due Process

IDA is not subject to a comprehensive code that governs all aspects of decision-making, including lobbying, public consultation, *ex parte* contacts, the publishing of decisions, and public appeals processes. Nevertheless, IDA's operations increasingly feature elements of openness and transparency. IDA decisions, particularly on major policy and regulatory issues, are widely regarded as well reasoned and fair. Moreover, IDA has demonstrated an ability to incorporate a certain level of transparency in such major policy and regulatory issues without sacrificing its ability to render decisions quickly.

The swiftness of IDA's decision-making is often praised by operators and highly valued within

IDA itself. Nevertheless, IDA has not opened its decision-making meetings to the public and it is often difficult to tell where the real responsibility for decision-making lies. This may make it difficult for companies within the regulated industries to determine how to present their views, to whom their views should be presented, or, indeed, whether their views will be taken into account.

#### 10.1.1 Public Meetings

The IDA Act requires the Board to meet but allows the Chairman to determine how frequently such meetings should occur.<sup>74</sup> The Board renders decisions through consensus building and discussion. Board meetings are closed to the public, and several operators indicated they have no information about what the Board does or how its decisions may affect them, although several Board members are from the private sector.

However, since the Chairman and the Board have in practice delegated most major regulatory and operational authority to the Chief Executive Officer,<sup>75</sup> those decisions routinely are made by IDA's executive management committee or by individual executives. Regulatory decisions may not be subject to votes. They certainly are not decided through votes at public meetings.

Thus in contrast with regulatory agencies that are headed by elected or appointed commissions, which may be required to vote publicly on decisions, IDA generally takes actions without public meetings or public votes. And IDA's management system more closely resembles a corporate model than a government bureaucracy. Moreover, because of the close relationship of MCIT to IDA, market players often are not aware where decisions are taken or by whom. While IDA has begun conducting public consultations on decisions in which it solicits comments from members of the public, its decision-making meetings are not open to the public. Moreover, the role of the Ministry is not open to public scrutiny, nor does the Ministry "vote" on any decisions that it may make in conjunction with IDA.

<sup>74</sup> In practice, they occur quarterly.

<sup>75</sup> In fact, the Board serves largely an advisory or strategic role. See Section 5.4 above.

An often-cited example of the closed nature of decision-making in Singapore is the way in which the government decided, in January of 2000, to accelerate the advent of full competition. As one of the most crucial, watershed decisions in the history of Singapore's telecommunications market, the decision involved high-level discussions within IDA, the Ministry, and other elements of Singapore's governing cabinet. Several of Singapore's operators, however, said they were not consulted on the decision and, in fact, had only several days' notice of its impending announcement to the public.

### 10.1.2 Public Consultation

As a general practice, IDA now holds public consultations in its deliberations of major policy issues or regulatory documents that affect the industry as a whole, or the public at large. The best example of this is the consultation process IDA engaged in when it drafted the code of practice for competition. The consultation consisted of two rounds of written comments – extending the comment deadline at least once – and two public forums held to respond to questions about the proposed code. Moreover, based on its review of input it received in the comments and forums, IDA altered the proposal in several respects, reflecting the information it had gained through the public consultation process. Moreover, IDA completed its consultation process in just six months. As described above, a similar consultation process was held to help evaluate SingTel's proposed RIO.

As another example, IDA released on 27 April 2001, a consultation document on “third-generation” (“3G”) mobile virtual network operators, a key issue for upcoming 3G mobile service rollouts, which must be completed by 2004. In issuing a call for comments, IDA noted that it intended to publish all comments on its website and instructed anyone filing commercially sensitive material carefully to mark any materials that should be redacted prior to publication. In an effort to meet the twin goals of transparency and speed, IDA allowed public comments to be filed only until 31 May 2001.<sup>76</sup>

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<sup>76</sup> On 16 October 2001, IDA issued a consultation paper on proposed guidelines on the review of mergers and acquisitions. See IDA media release 16 October 2001 at <http://www.ida.gov.sg>.

Further, through its press office and, especially, through its website, IDA reports widely on its activities, including regulatory decisions, consultation documents, and promotional programs.

There is no legal requirement, however, for IDA to seek public comments on its proposals or to develop a written, public record of all materials it receives and uses as the basis of its decisions. It would appear that IDA prefers not to implement rigid public consultation guidelines so that it can balance the need for transparency with its goal of achieving speedy regulatory decisions.

Moreover, many decisions regarding individual companies and complaints continue to be considered and reached without general public comment, or with input only from the company most directly concerned. Thus, when IDA and the Ministry deliberated the compensation amounts to be awarded to SingTel and StarHub, they did not consult the rest of the industry or the public at large on the proper monetary amounts or the proper grounds for determining those amounts. Rather, only SingTel and StarHub were consulted – and only then with regard to the compensation package that would affect each operator.

### 10.1.3 Confidentiality

Once decisions are reached, not all of them are made public. If a ruling or directive directly affects only a single company – such as an enforcement or compliance letter or directive – it may simply be sent to the target company and not made generally available. Thus, the industry has no systematic way to access records or decisions that, while directly affecting just a single operator, also would be instructive to other companies. Nor is there any official way to monitor what IDA is ordering a company to do in such cases.

Moreover, while the code requires that operators make end user rates public, either in contracts or tariffs, interconnection rates are not published publicly. Operators can obtain them, confidentially, in order to make business decisions involving interconnection. But they are not generally available to the public at large.

## 10.2 Right of Appeal

### 10.2.1 Appeals to the Ministry

In contrast to the lack of specific criteria regarding decision-making, public consultation and publishing of decisions, there are established, carefully spelled-out methods for appealing IDA's decisions to the Ministry provided under the terms of the Telecommunications Act of 1999.<sup>77</sup> For example, any public telecommunications licensee that is "aggrieved" by an IDA decision to modify its license can appeal to the Ministry, but it must do so within 14 days of the operator's receipt of the IDA ruling. During the 14-day period, and any period during which the Ministry considers the appeal, IDA cannot enforce its decision.<sup>78</sup> The Ministry's ruling on the appeal is final.

Moreover, the code of practice for competition spells out procedures that IDA must follow in enforcement proceedings. IDA must first provide a written notification to the licensee of its intent to undertake enforcement action, clearly spelling out what provisions of the Code IDA believes have been violated. The licensee then has 15 days to respond, in writing, to the notice (IDA may extend this period at its discretion). IDA then will review the licensee's pleading, and it may, in the interim, issue a temporary cease and desist order pending its review. If it determines that the licensee has, in fact, violated the Code, it may:

- Issue a warning to the licensee;
- Issue a cease and desist order;
- Issue a directive to take remedial action;
- Impose fines of up to the statutory maximum (SGD 1 million per violation); or in extreme cases,
- Suspend, cancel, or shorten the duration of all or part of the license.

These procedures give companies a significant degree of certainty that they will receive due process, according to specified procedures, when they become the target of an IDA investigation or enforcement proceeding. Coupled with the right of appeal to the Minister, operators

have due process protections, pursuant to explicit provisions of law and the Code.

Operators are fully aware of their right to appeal, and in the past, issues have been escalated to the Ministry, if only informally. The operators note, however, that if they take their cases directly to the Ministry, they believe that IDA will already have been there to present its own case. Indeed, given the nature of the close relationship between the IDA and MCIT, it is not always clear to operators whether the Ministry did not have a crucial role in making the very decision they are appealing. Nevertheless, the Ministry will hear operators' viewpoints and will often work to bridge differences among operators or between operators and IDA. The Ministry often prefers to provide this informal guidance rather than officially receiving an appeal of an IDA decision.

### 10.2.2 Appeals to the Courts

Operators may also seek redress from decisions made by IDA, or even the Ministry, by filing suit in a Singaporean court. More specifically, courts are empowered to hear cases in which a party alleges that a legal breach of the country's telecommunications statutes has occurred. Despite the availability of this judicial avenue for relief, however, no operator has yet taken a case to court against the government. Operators explain that the reticence has three roots: (1) operators' unwillingness to endure the delays and time lags inherent in lengthy judicial proceedings; (2) a general, cultural and political tendency to avoid confrontation and opt for quiet resolution of disputes; and, to a lesser extent, (3) uncertainty about how willing and ready a court might be to break with government policy in favor of a single operator. In a small, consensus-based political culture, suing the government publicly in court would appear to be the last resort for operators seeking to retain a good working relationship with their government.

Nevertheless, in late July 2001, a lawsuit between IDA and SingTel was launched. But it was the Authority that moved against SingTel over the compensation package awarded to SingTel in 1996, when the government abrogated the exclusivity provision of SingTel's license and awarded a license to StarHub. The government has claimed that it calculated the compensation amount in the belief that the

<sup>77</sup> See Part IX, Article 69 of the Telecommunications Act.

<sup>78</sup> In situations other than license modifications, IDA's decisions generally are enforceable pending appeal.

compensation award would be taxable. Therefore, it added approximately SGD 388 million to the package – above and beyond its calculation of the actual losses – to cover SingTel’s tax liability.

The tax authorities later determined, however, that the compensation payment was a tax-exempt capital gain. Since SingTel did not have to pay tax on the award, the government now believes it has over-compensated SingTel by SGD 388 million. IDA has sought a refund of that amount.

If the issue were to be decided by the courts, it would be first major litigation pitting an operator against the government ever to reach the judicial level. And even then, officials noted, the issue is more one of taxation, not telecommunications policy, *per se*. Nevertheless, as the number of operators grows, it may be inevitable that more intractable disputes among operators – or between a single market player and the government – will arise, straining the ability of IDA and MCIT to bridge differences in Singapore’s traditional manner of quiet diplomacy.

### 10.3 Openness and Access

One way to analyze transparency is to examine the degree to which individuals within companies, including operators, industry groups, or the public can access the staff of a regulatory agency to present their views and requests.

In Singapore, the process of gaining access to regulatory staff members of IDA is extremely open and very informal. In general, executives at top operators and IT companies may simply pick up their telephones and call IDA staff members and executives and ask questions or seek meetings. The operators employ regulatory specialists whose job it is to represent their companies in relations with the regulator. They are well acquainted with IDA’s operating structure and know whom to call when their companies seek information or a decision from the regulator. Conversely, IDA staff members may well call the companies’ regulatory specialists when they want to seek input or gather information on an issue.

However, IDA’s open access practices are beginning to change. As part of some of its recent calls for public consultation on major

policy and regulatory issues, IDA has noted that it will not allow private meetings on the issue under consultation, instead preferring that all information be provided through filing formal, written comments which are then posted on IDA’s website (with the exception of redacted confidential information).

There is no set of regulations governing how or when regulatory affairs specialists may contact IDA personnel or seek to influence a pending regulatory decision. It is common for IDA to meet with representatives of companies and other government agencies. There is no requirement, however, for a record of the dates, times, and content of such meetings or correspondence to be included in a public docket or public record.<sup>79</sup> A company may find out that IDA has met with a rival or competitor on an issue of mutual interest, but there is no requirement that it be notified officially that such a meeting occurred – or to be informed about what was discussed. Companies are simply assumed to be active on their own behalf, thus providing other companies with an incentive not to be left out of the dialogue. That dialogue, however, is not public, unless IDA decides (as it now frequently does) to launch a public consultation.

Despite the lack of formalized rules governing access, operators in Singapore report that they have no problem gaining access to key regulators to present their viewpoints and requests. IDA is generally receptive to their views, although it does not always rule in exactly the way any given operator would like – nor would the operators expect it to, in all cases.

### 10.4 Ethics Rules

To maintain credibility as a fair and impartial regulator, an agency must be governed by rules and standards that rule out the possibility for ethical lapses, or even the appearance of questionable behavior. This is singularly important in Singapore, where there are high standards of personal and professional behavior. IDA has taken steps to ensure that it preserves the

<sup>79</sup> In the United States, for example, the rules of the Federal Communications Commission may either ban “*ex parte*” contacts or presentations that might occur outside the standard public comment rounds, or it may require that any such *ex parte* meetings be publicly disclosed, allowing other interested parties to be aware that their rivals are engaged in efforts to sway the Commission’s opinion.

integrity of its ethical reputation. These include the following:

- Top regulatory officials must report their financial interests before hiring, and may be asked to divest or place in trust holdings any financial interests that would give rise to the appearance of conflicts of interest in their roles as regulators.
- Officials may be asked to recuse themselves from any discussion of issues that may have an impact on a company or other entity to which they have current or past ties and relationships. For example, the Chairman and CEO have asked certain Board members to recuse themselves from discussions of matters that ultimately could affect their companies. In addition, a current staff member, who came to IDA from one of Singapore's domestic operators, was instructed that she would have no involvement in a dispute involving her former company, in order to avoid any grounds for challenge by the parties to the dispute.
- There is a strict limit on the value of gifts that regulators are allowed to receive. The limit is set at a nominal level, roughly USD 16.
- Whenever IDA distributes money as part of one of its promotional co-funding schemes, it is careful to set objective criteria for awarding the funds, and the employees who make grant decisions are not the same as those who make regulatory decisions.

Despite the lack of formal mechanisms ensuring transparency, it appears that companies with businesses regulated or otherwise addressed by IDA do have sufficient and even ready access to the people they need to reach at IDA. Moreover, IDA's regulatory staff is reported to be receptive to their views, and fair and equitable in incorporating those views into ultimate decisions. Overall, operators say they view IDA as a fair (if not always entirely transparent) and credible regulator.

## 11 Assessment

As with any newly minted regulatory agency – even one so firmly grounded in regulatory past practice and structural reform as IDA – an assessment of its actions and operations inevitably will result in the identification of both best

practices and ongoing challenges. The Section below discusses both best practices and continuing challenges facing IDA.

### 11.1 Best Practices

#### 11.1.1 Speed and Efficiency

At the time this case study was being prepared, only a little more than a year had elapsed since Singapore's government had authorized full telecommunication service competition. When that decision was made, in January 2000, it marked the acceleration of previous plans, and much work needed to be done by the government and operators alike to prepare for and foster market entry by new players.

Many operators and outside observers give IDA and MCIT excellent grades for the speed in which they accomplished these tasks. It should be noted that IDA had been in existence less than two months when it learned that it would have to take on the task of introducing full competition, and that it had less than three months to design a plan to carry out that task. In effect, IDA had to lay the groundwork for a radical shift in the country's entire regulatory regime, at the time it was still coping with the turmoil and flux that occasioned its own creation.

IDA has succeeded in laying the foundation for competition and market growth by setting stringent limits on the amount of time it takes to resolve pressing regulatory issues. Where public consultation occurs – which it increasingly does – there are crisp deadlines to file comments, and IDA staff members respond with rapid action once they have received industry and public viewpoints. As a result, the process of establishing guidelines and regulations has not been characterized by the delays that have plagued regulators in other countries.

#### 11.1.2 Orientation toward Results

In tandem with IDA's focus on speed and efficiency, there is a belief that regulation does not exist for its own sake but rather as a tool to achieve Singapore's goals of fostering competition, stimulating the growth of vital info-communications industries, and improving the quality of life. Even at this early stage, IDA executives and MCIT policy-makers can point to certain data that indicates their over all efforts,

including in the regulatory sphere, have been successful:

- Mobile service penetration has reached 70%, with vibrant competition for both pre-paid and contract customers.
- There are now more than 10 competitors offering IDD services, and IDD rates for consumers have dropped an average of 60%. Rates on some routes have dropped 80%.
- As much as SGD 3 billion in new network investment has been committed for the period of 2000-2003 as competition gets started. As the market matures, IDA is looking for further investments, resulting in more competition and, hopefully, accelerated savings for customers.
- Finally, government officials estimate that some 4,000-5,000 new jobs have been created.

IDA executives and their colleagues in the Ministry caution and acknowledge that Singapore's competitive market remains immature and in a state of development. But they are encouraged that their efforts to date appear to be bearing fruit. It is important to state that IDA's regulatory activities are not designed to maintain a status quo or to preserve a market structure that already exists, but to establish competitive conditions and regulatory certainty.

IDA's result-oriented philosophy and talent for speed and efficiency is no more apparent than in the passage of the Competition Code and RIO. Again, although it had only been in existence for a matter of months, the Authority quickly moved to finalize the Code, setting the framework for competition – based on technological neutrality, asymmetric regulation and built-in review periods to adapt to changes in market conditions and technology – and the rules for implementing that framework. It followed that exercise with completion of the RIO to enable any licensed new market entrants to interconnect with the incumbent without having to engage in the kind of lengthy negotiations that have stalled competition in other market. Both the Code and RIO have won the praises of industry and analysts alike. Clearly, IDA is serious about setting key goals and achieving them.

### 11.1.3 Independence and Credibility

IDA appears to be sufficiently independent from individual operators and companies that it regulates, and from the industry collectively. It is able to rapidly consider and adopt decisions, without undue influence by any single company. Indeed, while showing a sensitivity to companies' positions, and a willingness to listen to their views, IDA regularly makes hard decisions with far-reaching impact on the operators it regulates. Those operators may not always like or agree with those decisions, but they generally respect and adhere to them.

IDA can increasingly rely on objective regulatory criteria, such as the Competition Code, for its decision-making. This means that it can avoid any appearance of arbitrary decision-making; its rulings are grounded in regulations that are clearly spelled out in documents that have the force of law, and which can be used as a reference by operators and the public. The more IDA adheres to the Telecommunications Act and the Code, the more institutional strength it can bring to bear on violators. It is revealing that both dominant and nondominant carriers perceive that IDA is regulating them differently. The fact that regulation falls more heavily on dominant carriers is entirely consistent with the dictates of the competition code, which relies heavily on the ethos of asymmetric regulation.

A further element of independence should be considered with regard to IDA – the independence of regulatory operations from promotional operations and goals. After absorption of NCB, which was wholly focused on promotion of the industry, there is a powerful and substantial concentration within IDA on developing and promoting the industry, in general, and on subsidizing particular, deserving companies. At this juncture, however, the regulatory mandate appears to remain a vital, core part of IDA's mission and its regulatory objectivity and neutrality do not appear compromised by the elements within the institution that are focused on promoting and developing Singapore's information communications markets.

### 11.1.4 Transparency

IDA has made strides towards greater transparency, and it now seeks public comments on most, if not all, major policy and regulatory initiatives. In addition, the agency maintains a

high degree of openness in providing access to staff members for questions and input, and through various mechanisms (e.g., membership on the Board and the establishment of advisory committees), it appears eager to seek industry input. Moreover, IDA maintains a substantial Internet presence through its website (<http://www.ida.gov.sg>), on which it posts many regulatory documents, fact sheets, press releases and other public information materials. These steps all indicate that IDA values transparency and is aiming to increase public participation in the regulatory process.

### 11.1.5 Convergence And Technological Neutrality

The government of Singapore has invested very heavily in the idea of convergence, both as a global industry trend and as a concept to organize its regulatory and promotional activities. To date, the concept has taken root most deeply with the promotional units and operations of IDA. United by a common vision and similar functions, the promotional wings of the formerly separate TAS and NCB have melded into a seamless, integrated function within IDA.

Looking solely at regulatory frameworks and practices, there currently remain significant differences in how traditional circuit-switched networks are regulated and how packet-switched networks and operators are regulated. Moreover, there are still questions about how to integrate multimedia and interactive broadcasting services – not to mention mobile broadband data applications – into the converged regulatory framework. In this respect, IDA is little different from other regulatory agencies around the world, many of which are struggling to find a workable approach that will account for convergence.

What IDA and MCIT have accomplished, however, is to look forward and build into Singapore's laws and regulations as much platform neutrality as possible, in effect clearing the way for equal treatment of all network platforms as digital technologies and services evolve. In addition, the mandatory and optional review periods built into the Code will allow IDA to adapt to changes in market condition and technology. Moreover, IDA's neutral approach is designed to prevent regulation from holding back the development of new industries and products. The country's top ICT policy-makers realize, however, that convergence is an incom-

plete and unpredictable process, and they are continually looking at ways to study the process as it affects all communications industries. IDA's focus on convergence involves an ongoing commitment to proactively study it and discover how the market is evolving.

## 11.2 Challenges

### 11.2.1 Separation from Political Power

As stated in Section 11.1.3, IDA appears to have established itself as independent of control or undue influence by the former monopoly telecommunications provider, SingTel, or by any other single operator. Backed by the Code for competition, IDA is operating as a strong, independent, credible regulator, without any appearance of undue bias in its decision-making.

IDA does not, however, have full independence from its oversight ministry, MCIT. The Ministry is the final arbiter of many decisions, including those with significant monetary, political, economic, and social implications for Singaporean society. While IDA does have powers established by statute, that legislation gives the Ministry a clear, ongoing role in supervising the agency's activities. It is often difficult for outsiders to ascertain exactly where along the chain of authority between MCIT and IDA any given decision may be made.

The risk inherent in maintaining such a symbiotic relationship between a ministry and an independent agency is twofold: (1) that changes in government or the political fortunes of one group or party will short-circuit regulatory polices and erode regulatory certainty, or (2) any given regulatory decision may be based, in part or in whole, more on larger political considerations than the merits or facts at issue in that particular case. In the case of Singapore, any such danger – if it exists – would likely not be of the first type. Given the predominant power of the ruling party, precipitous changes in power or policy are not likely to occur. But in order to ensure there are no allegations of political interference, IDA and the Ministry should continue to be scrupulous in justifying their decisions based on the merits and/or arguments of the parties involved or upon concrete public interest rationales.

### 11.2.2 Transparency

While IDA's procedures evince a healthy and growing respect for transparency, those procedures are not sufficiently codified to provide legal assurance to parties that they will be fully informed of all agency actions impacting their interests. Decisions regarding public consultation are often left to the discretion of the agency, creating an opening for selective or episodic public consultation processes.

IDA considers public consultation on material issues as important, but gives due consideration to the time and commercial sensitivity of the issues handled and the appropriateness of the issue to be opened for public consultation. Thus, disclosure of such information as interconnection rates or enforcement decisions against particular companies beyond the parties directly involved in an issue often gives way to concerns about confidentiality or proprietary information. Without clear and comprehensive rules governing transparency it may be difficult for new market entrants (and even existing players) to successfully negotiate the regulatory process or maximize their input into that process.

One way to address the transparency issue squarely might be to publish a code setting rules for decision-making and the regulatory process. Such a code could address, among other things:

- which proceedings must be subject to public consultation;
- which proceedings are open to general input, and which are confined only to the parties immediately involved;
- which documents will be part of the public record, and where documents are confidential, a justification of why they should be kept out of the public eye;
- whether decisions should be taken or voted upon in open, public meetings;
- in what circumstances should advance, public notice be given before final decisions are made;
- what kinds of decisions must be made at certain levels within IDA, or referred for input from the Ministry or other government entities.

Greater transparency is likely to accompany the transition to a fully competitive market. In part, IDA's decisions are increasingly expected to be

considered more "regulatory" in nature than policy-oriented. In addition, IDA's credibility will grow as it gains more experience and confidence.

### 11.2.3 Balancing Promotional and Regulatory Values

By including promotional and industry-building bureaucracies and regulatory staffs within the same agency, Singapore's policy-makers have attempted to marry functions and goals that, in their view, are complementary and mutually reinforcing. This represents an approach that differs from many countries that have created regulatory agencies. Frequently, the tasks of promoting and supporting the country's industrial base remain within ministries or are assigned to industrial development boards, while the newly created ICT agencies are assigned only regulatory tasks.

In practice, the union of promotion and regulation appears to be working in Singapore, where there is a consensus-based political system that works by identifying government-wide policy goals and implementing them in an integrated, focused manner. IDA will have to maintain clear "firewalls" to ensure the integrity of the regulatory process from pressure and influence by promotional officials within the agency – and, through them, from other parts of government or the industry itself – whose task is to promote Singaporean companies or put out a welcome mat for info-communications industries.

### 11.2.4 Flexibility

One of the strengths of Singapore's policy-making process is its coherence. The government has shown an ability to (1) identify the country's ICT needs and goals, (2) understand how those needs and goals fit into the country's overall economic and social development, (3) design comprehensive initiatives and policies to focus on those goals, and (4) put in place institutions and people with a clear mandate for achievement. The rationality of such an approach, however, may not be matched by the behavior of markets or market players. There is no way to plan every single business case or foresee every market failure in Singapore. Moreover, because of the increasingly international nature of global ICT businesses, much of what happens in the Asia-Pacific region is

simply beyond the control or reach of Singapore's planners.

The government has shown a willingness to alter course, even radically, when it decides a new policy and regulatory approach is needed. The best example of that is the decision to accelerate full telecommunications competition in 2000. Since IDA's creation, an ability to cope with life on the cutting edge of technological and market change has become part of the institutional credo of IDA. Both the agency and MCIT will need to continue to be light-footed enough – at all levels of bureaucracy and staffing – to fine-tune or even overhaul their approach to regulation, while continuing to establish regulatory certainty for new market entrants. This balancing act is one that is familiar to experienced regulators, including those in Singapore. It has become a veritable high-wire routine in the face of a global marketplace that remains stubbornly frenetic, mercurial, and unpredictable. The challenge for IDA (and all regulators) is not to become entrenched or overwhelmed in response to the sheer pace and volume of change.

### 11.3 Conclusion

Ultimately, the Singaporean government will itself be the final judge of whether IDA's structure and operations are sufficient to enable the country to attain its core goals for the ICT sector. For the purposes of this study, however, it is clear that there are several key ingredients of the government's approach, embodied in IDA, that can serve as models or best-practice standards for the establishment of independent, ICT-related agencies in other jurisdictions. Among the important principles of the Singaporean approach are the following:

- the recognition, embodied in the term *info-communications*, that computing, telecommunications, and broadcasting sectors are converging on packet-switched digital networks;
- the recognition that a fair, effective, and pro-competitive regulatory agency is a strategic asset in attracting foreign investment and industrial growth;
- the coupling of regulation and promotional activity as two complementary prongs of a single industrial development policy;
- the proactive effort by the government to act as a catalyst to market growth, with eventual reliance on market forces;
- the sheer breadth of the government's ICT planning efforts, which touch nearly every aspect of economic and social life in the country;
- the creation of a single "focus agency" (statutory board) to implement policy in a streamlined and efficient manner
- the integration of regulation into an overall scheme of industrial and network development;
- the emphasis on speed and efficiency in rendering regulatory decisions;
- the adoption of technological neutrality governing, at least in principle, the regulation of the info-communications sector;
- the adoption of asymmetric regulation of dominant and non-dominant operators;
- the adoption of an interconnection mechanism – the RIO – that speeds new market entrants' access.

## List of Interviewees

### Ministry of Communications and Information Technology:

Mr Alan Chan, Permanent Secretary, Communications and IT

Ms Choong May Ling, Director, Information and Communications Technology Division

Mr Ng Cher Pong, Deputy Director, Info-Communications Technology Division

### The InfoCommunications Development Authority of Singapore (IDA):

Mr Leong Keng Thai, Deputy Chief Executive & Director-General Telecoms

Mr William Hioe, Senior Director, Strategic Planning & International

Mr Andy Haire, Senior Director, Regulation & Operations

Ms Audrey Lee, Director, Interconnection

Mr Lim Choon Sai, Director, Technical Regulation

Ms Aileen Chia, Deputy Director, Economic Regulation

Mr Goh Seow Hiong, Special Assistant to CEO & Deputy Director, Infocomm Development Policy

Mr Keok Tong Ling, Deputy Director, Information infrastructure Development, Infocomm Development

Ms Fiona Yeo, Asst. Director, Market Access & Competition Policy

Ms Serene Ho, Asst. Director, E-Commerce Infrastructure, Online Development

Ms Janet See, Asst. Director Finance

### The Singapore Broadcasting Authority (SBA):

Mr Jason Hoong, Asst. Director, New Media, Policy & Planning Division

Ms Ann Paglar, Management Executive, New Media Policy, Policy & Planning Division

### Representatives of the Private Sector:

Ms Chan Sock Leng, Director, Corporate Development, Mobile One (Asia) Pte Ltd – M1

Ms Lou Lian Pei, Executive, Corporate Development, MobileOne (Asia) Pte Ltd – M1

Mr Ronald Lim, Legal, Regulatory & Secretariat, StarHub Pte Ltd

Ms Genevieve Low, Legal, Regulatory & Secretariat, StarHub Pte Ltd

Mr Joseph Welch, Director of New Markets and Regulation, MCI WorldCom Asia Pte Ltd

Ms Ying Lai Chang, Director, International Affairs & Regulatory Affairs, Singapore Telecommunications Ltd

Mr Daniel Noble, Business Development Manager, DavNet Singapore Pte Ltd

Ms Vivien Chow, Senior Manager, Regulatory Affairs & Operations, Singapore Cable Vision Ltd.