

GROWING TO GO GLOBAL

Report by the iN2015 Enterprise
Development for Singapore-based
Infocomm Companies
Sub-Committee

Singapore: An Intelligent Nation, a Global City,
powered by Infocomm



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Preface

Developing Singapore's infocomm industry is critical to the success of the iN2015 masterplan and the nation's economy. The infocomm industry, as we have seen in recent years, is making a positive contribution to the country's Gross Domestic Product and earning export revenue. However, its contribution to the economy goes beyond that. Infocomm is a strategic enabler that changes the way we live, work and play.

As you will read in the other iN2015 reports, infocomm promises to enable new solutions and transform key vertical sectors over the next 10 years, amongst them are healthcare, manufacturing and education. To help make the fantastic visions and scenarios in other sectors a reality, the infocomm industry must build its capabilities to create innovative products and valuable business solutions, and drive sophisticated infocomm usage across the economy.

Confident of its potential, the Enterprise Development Sub-Committee has envisioned a globally competitive infocomm industry as an engine of growth for the Singapore economy. Bold targets have been set to turbo charge Singapore's economic growth over the next decade. As a start, this report outlines strategies and programmes to set us on a growth path.

The journey has only just begun. We invite you – Singapore's infocomm companies, local and multinationals, to participate in these programmes and work together as partners to realise iN2015.

I would like to express my sincere gratitude to the members of the iN2015 Enterprise Development Sub-Committee – a group of passionate and selfless individuals, who have come forward to contribute their insights, time and energy. Their broad experience and in-depth expertise from many years as industry leaders have illuminated the path ahead. Now, if we go forward together, I am confident we will be taking bigger strides towards realising this shared vision.



Mr Stephen Lim

Chairman

iN2015 Enterprise Development for Singapore-based Infocomm Companies Sub-Committee

iN2015 Enterprise Development for Singapore-based Infocomm Companies Sub-Committee

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Mr William Liu	President Green Dot Capital Pte Ltd
Mr Leslie Loh	Executive Chairman and Chief Executive Officer System Access Ltd
Mr Patrick Lung	Chief Executive Microsoft Operations Pte Ltd
Mr Shailesh Naik	Managing Director Strategy & Operations Asia Pacific Cisco Systems (USA) Pte Ltd
Mr Kevin Walsh	Senior Vice President Research & Development Oracle Corporation

Executive Summary

In 2004, Singapore's infocomm industry¹ revenues stood at \$34.77 billion, a six per cent increase from \$32.83 billion in 2003. Despite stiffening competition, it has continued to grow at a healthy nine per cent, hitting around \$37.89 billion in 2005.

Besides attracting multinationals to base their infocomm research and business operations in Singapore, there is a need to grow our local enterprises. Singapore's infocomm local enterprises are usually small in size with total operating receipts² of less than \$50 million. They generally lack the expertise and business connections to market their products and services outside the country. There is also a lack of distinct brand to differentiate Singapore's infocomm local companies from their competitors in the global marketplace.

Singapore-based infocomm enterprises' activities are generally skewed towards systems integration, marketing, distribution and support. Very few companies are involved in infocomm Research & Development (R&D) activities here.

To propel Singapore forward, the Enterprise Development Sub-Committee's vision is to develop a globally competitive infocomm industry as an engine of growth for the Singapore economy.

To support this vision, bold targets have been set to measure the infocomm industry's contribution to national economic growth by 2015:

- 2-fold increase in value-added³ of the infocomm industry to \$26 billion.

- 3-fold increase in infocomm export revenue to \$60 billion, with a proportionate increase in the export revenue of infocomm local enterprises.
- 4-fold increase in Software and IT Services revenue to \$36 billion, contributing to 40 per cent of total infocomm revenue.

All these achievements will be made possible through a holistic set of strategies and strong collaboration between the industry and the government. In this report, the Sub-Committee proposes several strategies to achieve the above targets:

- Strengthen the development of the industry's domain and technology capabilities
- Embark on a concerted international branding and marketing of "Made-by-Singapore"⁴ infocomm products and services
- Nurture the expansion and growth of local infocomm enterprises
- Develop sectoral solutions for export
- Attract and nurture a vibrant pool of infocomm technopreneurs and start-ups

1 This is an activity-based definition. The main categories of activities included are (a) wholesale of infocomm products such as telecommunication equipment; computer equipment, hardware and software; office equipment, etc.; (b) retail sale of infocomm products; (c) telecommunication services; (d) computer and IT services; and (e) content services. Activities pertaining to the manufacturing of infocomm products are not included.

2 Total operating receipts comprise end-user sales in Singapore, original equipment manufacturer (OEM) sales, other reseller sales in Singapore and export sales.

3 Value-added, also known as net output, is the gross output less the intermediate inputs used in the course of production. It comprises the compensation of employees, operating surplus, the consumption of fixed capital and the excess of indirect taxes over subsidies.

4 Products or services that are either designed, developed or/and delivered by Singapore-based companies.

Collectively, these strategies spell **DoT.BEST**.

- **D**omain and **T**echnology capabilities development
- **B**randing and marketing
- **E**xpansion and growth of infocomm local enterprises
- **S**ectoral solutions for export
- **T**echnopreneurs and start-ups attraction

These strategies are expected to benefit not just the industry but also transform other economic sectors and benefit the economy as a whole. The Sub-Committee hopes that by 2015, this will make the “Made-by-Singapore” brand one that is well-respected worldwide and synonymous with innovation and high quality.

CHAPTER 1
LONG-TERM VISION
FOR SINGAPORE'S
INFOCOMM INDUSTRY

Since the first National Computerisation Plan was launched a quarter century ago in 1981, Singapore has pursued infocomm technologies strategically. Singapore has used them to improve the productivity and competitiveness of the economy, the quality and efficiency of government services, and the quality of life of Singaporeans.

Singapore has done well in these areas. It was ranked first in the World Economic Forum's Global Information Technology Report 2004-2005, and second in 2005-2006 for readiness and usage of infocomm in businesses, government and society.

These achievements would not have been possible without the presence of a nationwide infocomm infrastructure, a thriving infocomm industry and competent infocomm manpower. The Singapore infocomm industry is in excellent health. Its contribution to the Gross Domestic Product (GDP) is estimated to be 6.5 per cent in 2005. However, Singapore cannot afford to rest on its laurels as more countries are investing heavily in infocomm infrastructure and developing their infocomm industries and competencies today.

To stay ahead of the competition and capitalise on new opportunities, Singapore has to continually upgrade the capabilities of its infocomm industry and manpower. Given the limited size of the Singapore market, the country's infocomm

enterprises must adopt a global mindset and venture into new markets in ASEAN, China, India and the Middle East. The playing field in each of these markets will be different.

To compete with global players, Singapore's infocomm enterprises will not only have to be technologically competent but also well-tuned to the needs of specific markets. This will allow them to provide infocomm products and services that markets want.

Over the past 25 years, infocomm technologies have advanced by leaps and bounds to transform businesses, industries, governments and societies. Some of the technologies that are taken for granted today, such as the use of the Internet for business applications, mobile phones and wireless local area networks, were practically unheard of just a decade ago. At this pace of technological development, there will be a slew of new infocomm technologies in 2015 that exist only in laboratories today or are not invented yet.

The opportunities for Singapore's infocomm industry to develop, exploit or commercialise such technologies are tremendous. To gain a first-mover advantage, the infocomm industry will have to plan ahead to build up its requisite capabilities and competencies ahead of demand.



The Sub-Committee's vision for the industry is:

A globally competitive infocomm industry as an engine of growth for the Singapore economy.

It has set these bold targets to measure the infocomm industry's contribution to Singapore's economic growth over the next 10 years:

- 2-fold increase in value-added of the infocomm industry to \$26 billion.
- 3-fold increase in infocomm export revenue to \$60 billion, with a proportionate increase in the export revenue of infocomm local enterprises.
- 4-fold increase in Software and IT Services revenue to \$36 billion, contributing to 40 per cent of total infocomm revenue.

Besides the 2-fold increase in infocomm industry's value-added and 3-fold of increase in export revenue, a bold target has been set to increase the revenue of Software and IT services by 4-fold by 2015. In year 2005, the revenue of Software and IT services only contributed about 23 per cent of the infocomm industry's total revenue. By year 2015, Software and IT services will be the major contributor of infocomm industry with at least 40 per cent share.

The competitiveness of Singapore's infocomm industry can be determined through international ranking and benchmarking reports, or through proxy measures such as growth in market share in overseas markets.

One possible headline that the industry would want to see in 2015 news reports is: "'Made-by-Singapore' ranked leading global brand for innovative infocomm products and services."

When the world wants innovative infocomm products and services, the label to look for will always be "Made-by-Singapore". The products and services that are designed and developed by Singapore-based companies will be well-known for their quality and have pervasive presence throughout the world. This is our aspiration.

CHAPTER 2
CURRENT LANDSCAPE
OF SINGAPORE'S
INFOCOMM INDUSTRY

Performance of Singapore Infocomm Industry

The infocomm industry today is a key engine of Singapore's growth and is expected to remain a key contributor to Singapore's economy. The total revenue⁵ of Singapore's infocomm industry reached \$37.89 billion⁶ in 2005. This was a nine per cent rise over 2004's infocomm revenue of \$34.77 billion.

The value-added of the infocomm industry grew by about 11 per cent⁷ to \$12.6 billion in 2005, which was 6.5 per cent of Singapore's GDP at current market prices. Between 2000 and 2005, the Compound Annual Growth Rate (CAGR) of the infocomm industry value-added (7.8 per cent) was almost double the CAGR of Singapore's GDP (4 per cent).

The composition of the infocomm industry did not change significantly from 2003 to 2005 with the Hardware market segment having the highest share of the infocomm industry's revenue, followed by the Telecommunication Services segment as shown in Figure 2-1.

Total Infocomm Industry's Revenue (\$Billion)

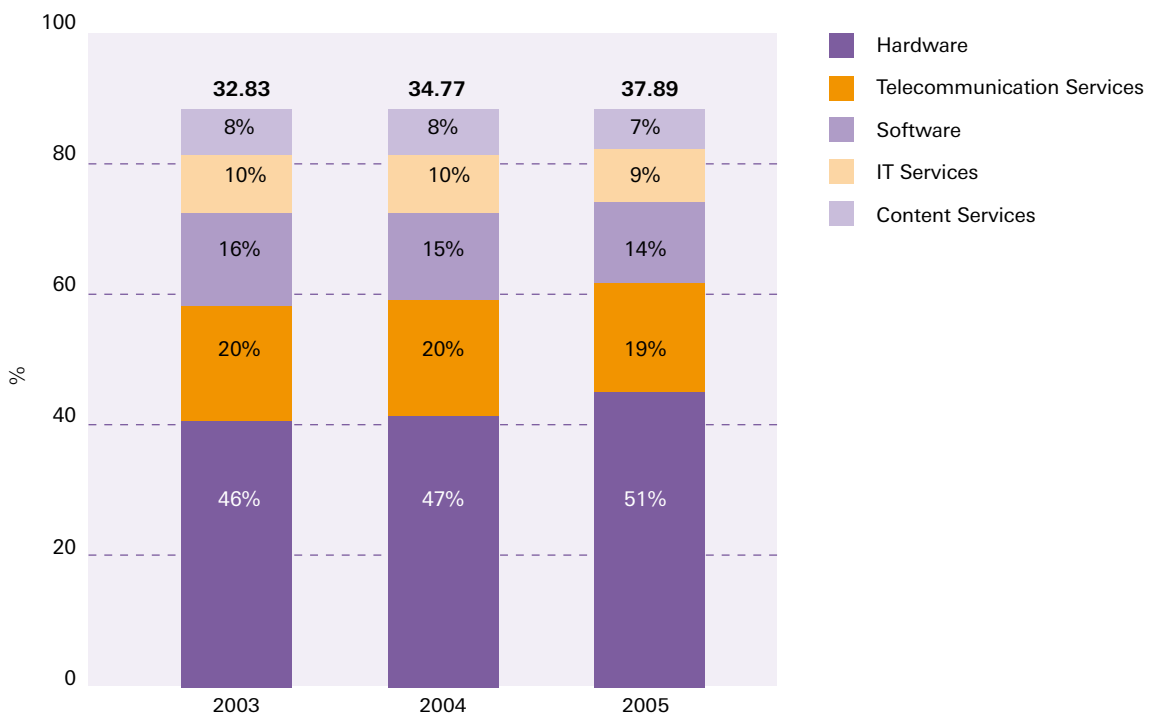


Figure 2-1: Infocomm Industry's Revenue by Market Segments⁸

Source: Annual Survey on Infocomm Industry for 2005, IDA

⁵ Revenue of the infocomm industry is defined as export sales and end-user sales in Singapore, i.e. revenue excludes OEM/other resellers' sales.

⁶ "IDA Annual Survey on Infocomm Industry for 2005", IDA.

⁷ Estimated at current market prices.

⁸ "Hardware" includes personal computers/laptops, servers, workstations, servers, printers, peripherals, mobile phones and telecommunication services. "Software" includes application solutions software, development tools, system infrastructure software, component and embedded software. "IT Services" includes consulting services, implementation services, operation management services, processing services, managed services operations, IT education and training and support services. "Telecommunication Services" includes basic fixed lines services, mobile and wireless voice communication services, mobile and wireless data communication services and Internet access services/Internet service providers. "Content Services" includes both digital and non-digital content services. Digital content services include digital content processing, digital content management and digital content application.

In 2005, almost all the market segments experienced positive growth. The Hardware segment was the main contributor to the growth of the infocomm industry’s revenue, with its large base in 2005 and the highest growth rate as shown in Figure 2-2.

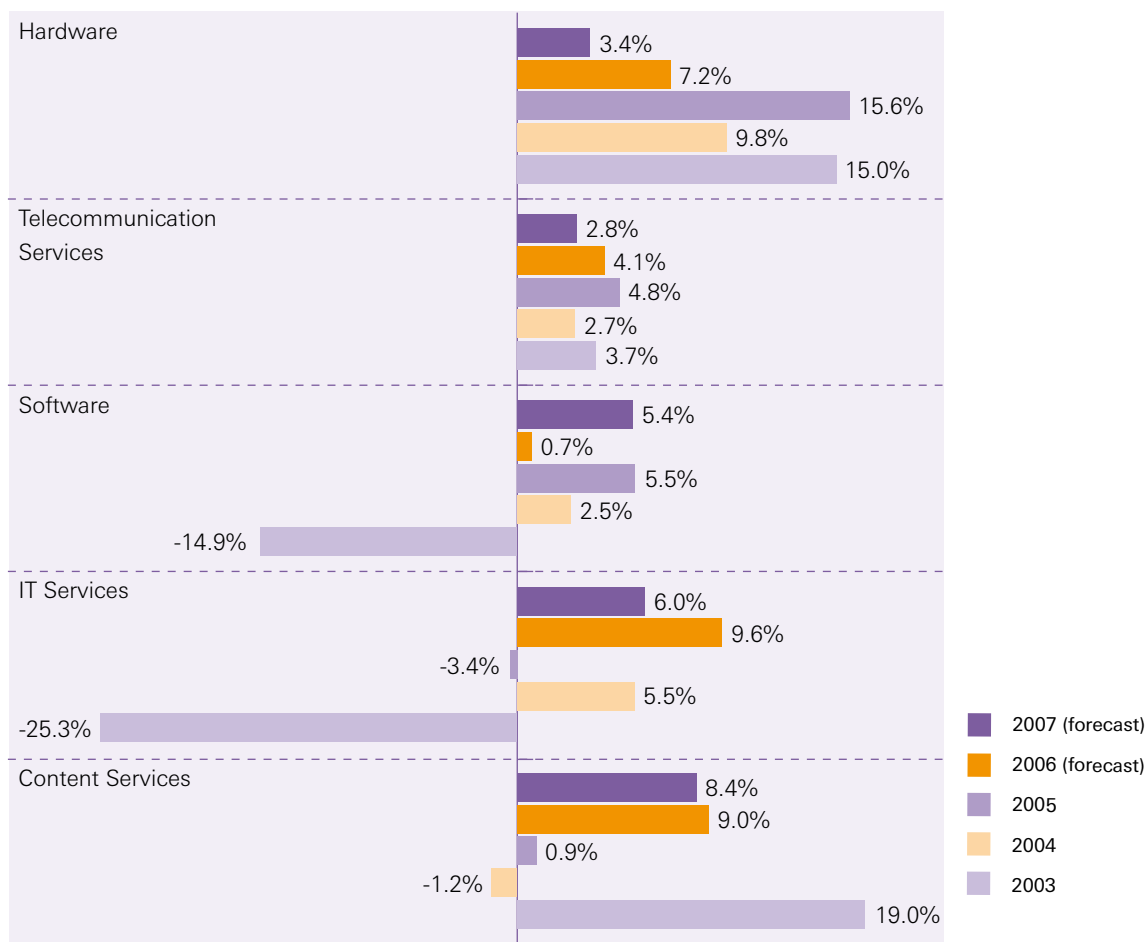


Figure 2-2: Revenue Growth by Market Segments
 Source: Annual Survey on Infocomm Industry for 2005, IDA

The export market spurred most of the infocomm industry’s revenue growth in 2005 with its 11 per cent growth. Consistent with the trend of previous years, the export market (58 per cent) continued to have a bigger share of the total 2005 infocomm industry revenue than the domestic market (42 per cent). All the export market segments registered positive growth in 2005 with the two largest segments (Software and Hardware) registering the two highest growth rates at 16.4 per cent and 10.4 per cent respectively. The external demand will continue to play an important role in the industry’s growth.

The infocomm industry is also a key employer of high value-added manpower. According to the IDA Annual Survey on Infocomm Manpower for 2005, there were 117,100 infocomm jobs in 2005 and these are projected to reach about 170,000 by 2015.

CHAPTER 3
ANALYSIS OF SINGAPORE'S
INFOCOMM INDUSTRY

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Despite its positive growth in infocomm, Singapore’s infocomm industry risks being overtaken by other high-growth countries in the region, especially India and China. To remain internationally competitive, the Republic has to use its strengths to capitalise on opportunities, especially within the region.

Figure 3-1 shows a high-level analysis of the industry’s strengths, weaknesses, opportunities and threats, which are elaborated in Annex A.

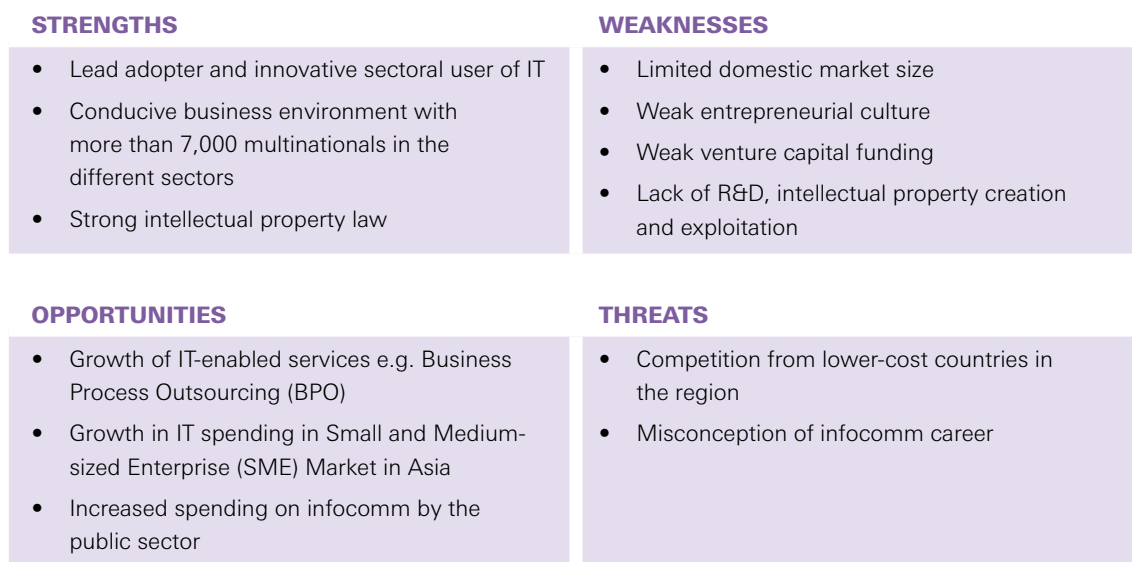


Figure 3-1: SWOT Analysis for Singapore’s Infocomm Industry

Current Situational Analysis and Implications

Reliance on Few Major Infocomm Players

While Singapore’s infocomm industry has performed well to date, it currently relies on only a few major players. Based on a sample of 2,000 infocomm local companies⁹, 21 per cent of the companies contributes to 73 per cent of the total operating receipts for the Singapore’s infocomm industry¹⁰. There is a need to grow our local enterprises so that they can better compete in the international market.

⁹ Infocomm local enterprises refer to companies with equal to or more than 30 per cent local equity.
¹⁰ IDA, 2005.

Limited Capabilities of Infocomm Local Enterprises (iLEs)

Around 96.5 per cent of the country’s local enterprises have total operating receipts of less than \$50 million as shown in Figure 3-2. Besides being small in size, they also generally lack the expertise and business connections to market their products and services outside the country. While they may be strong in technology capabilities, many have limited marketing and finance skills. Hence, very few have penetrated successfully into overseas markets.

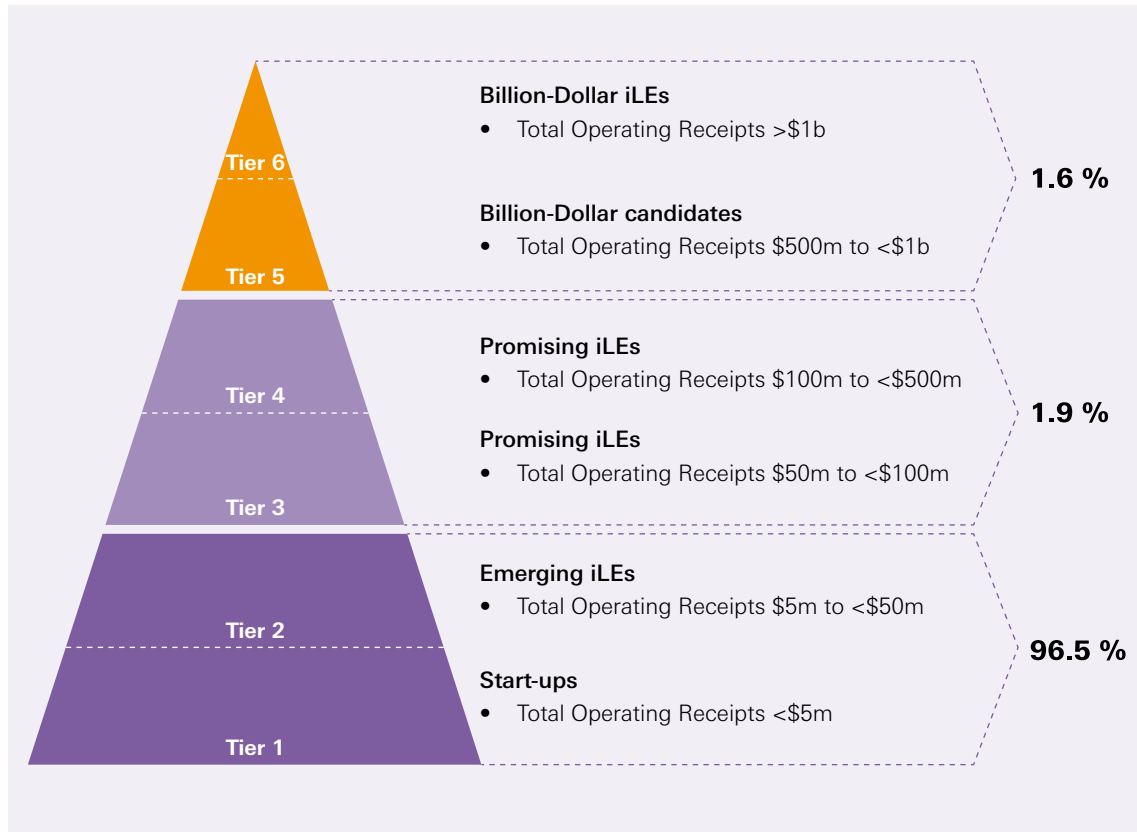


Figure 3-2: Infocomm Local Enterprises Total Operating Receipts Tier Pyramid¹¹
 Source: IDA, 2005

Singapore’s infocomm industry is now approaching a crossroads. Local enterprises will have to strengthen their external presence to continue growing or risk losing their competitive advantage to emerging lower-cost countries. As the size of the population here is small, they cannot rely on the domestic market to sustain long-term growth.

11 Data is based on a sample of 2,000 infocomm local enterprises (with equal or more than 30 per cent local equity) in Singapore.

Concentration of Infocomm Activities

As shown in Figure 3-3 below, the activities of Singapore-based infocomm enterprises are skewed towards systems integration, marketing, distribution and support. Multinationals tend to use Singapore as their regional headquarters for corporate management, sales, marketing and business development, instead of Research and Development.

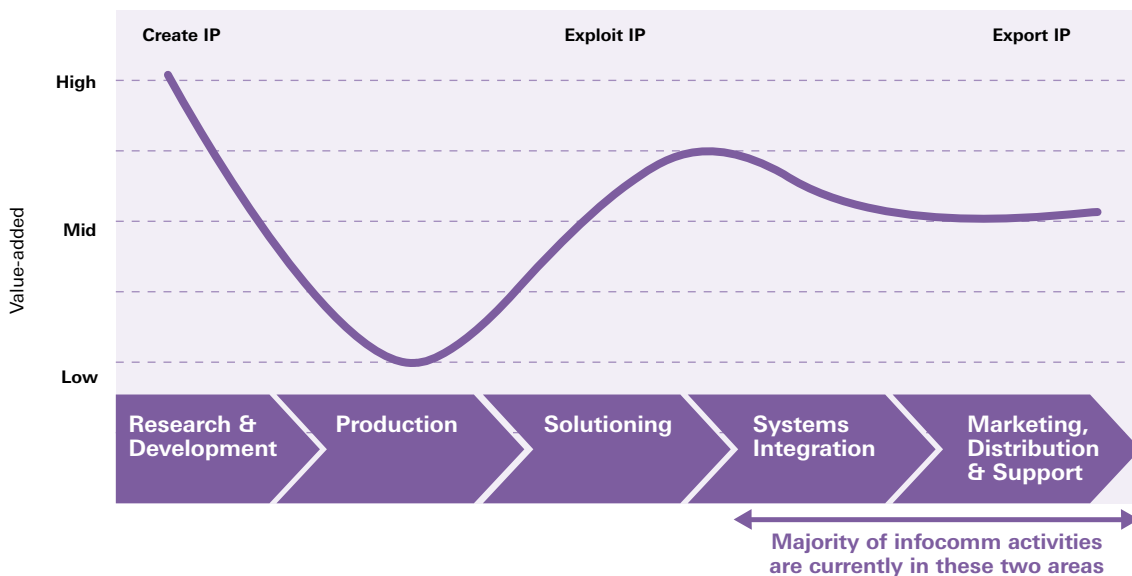


Figure 3-3: Activities of Singapore-based Infocomm Enterprises
Source: IDA

Likewise, local enterprises tend to be marketers and distributors of multinationals’ solutions or providers of system integration services. Although some software vendors have generated “Made-by-Singapore” applications, these are mostly standalone solutions that need to be customised for different markets.

This, coupled with Singapore companies’ focus on importing technologies from foreign companies, means that attractive start-ups and technological innovations in infocomm are few. This is evident from the low levels of infocomm investment from venture capitalists here. Another sign is that only a few local players have made a significant impact in overseas markets.

About half of the industry’s revenue is derived from selling hardware as shown in Figure 3-4¹². This segment provides lower profit margins compared to higher value-added areas like custom-made software, IT services and content development. Hence, there is a need for the industry to move towards higher value-added activities so as to create, exploit and export intellectual property. There is also an impending need to develop strong local enterprises to ensure sustainability of the infocomm industry in Singapore.

12 Annual Survey on Infocomm Industry for 2005, IDA.

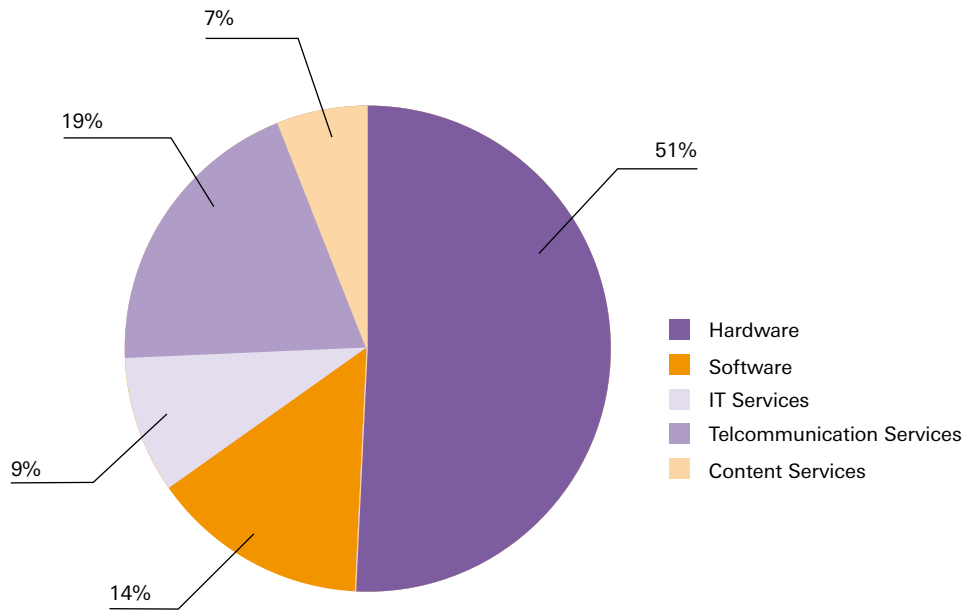


Figure 3-4: Breakdown of Singapore Infocomm Industry's Revenue by Market Segments in 2005
 Source: Annual Survey on Infocomm Industry for 2005, IDA

Lack of Branding

When local firms produce their own infocomm products and solutions, they struggle to sell them abroad. And with each enterprise making its own marketing pitch, the fact that the country as a whole has several worthwhile products to offer often goes unnoticed. The lack of a distinct brand further impedes Singapore companies in the global marketplace.

In contrast, many of our Asian neighbours have carved an infocomm image for themselves. For example, Japan is a leader in consumer devices and innovations in mobile technologies and applications; South Korea is recognised as a major electronics equipment producer and lauded for its high broadband penetration rate; India is well-known as the world's software house, while China is increasingly seen as a hardware centre. Unfortunately, Singapore does not appear to have global mindshare or distinct branding in any particular area, which leads to poorer reception in overseas markets for its companies' offerings.

CHAPTER 4
STRATEGIES TO REALISE
THE LONG-TERM VISION
FOR SINGAPORE'S
INFOCOMM INDUSTRY

In order for Singapore to have a globally competitive infocomm industry, there is a need to enhance the technology depth of Singapore’s infocomm industry and create diversity in the infocomm industry structure and profile. To overcome the challenges facing the infocomm industry and reposition it for the next leap, the Sub-Committee proposes to focus on three key areas, i.e. **Enterprise Capability Development, Branding & Marketing and Internationalisation**. These three areas can be addressed by five strategies. The following is a summary of the vision, goals and strategies of the Enterprise Development Sub-Committee.

Vision	A globally competitive infocomm industry as an engine of growth for the Singapore economy				
Goals	Enhance the technology depth of Singapore’s infocomm industry		Create diversity in Singapore’s infocomm industry structure and profile		
Strategies	Strengthen the development of the industry’s domain and technology capabilities	Embark on a concerted international branding and marketing of “Made-by-Singapore” infocomm products and services	Nurture the expansion and growth of local infocomm enterprises	Develop sectoral solutions for export	Attract and nurture a vibrant pool of infocomm technopreneurs and start-ups

The Sub-Committee proposes a holistic set of strategies that reinforce one another. Collectively, they spell **DoT.BEST**.

- **D**omain and **T**echnology capabilities development
- **B**randing and marketing
- **E**xpansion and growth of infocomm local enterprises
- **S**ectoral solutions for export
- **T**echnopreneurs and start-ups attraction

“From the little **red** DoT, you get the **BEST**”

Strengthen the Development of the Industry's Domain and Technology Capabilities

Domain Capabilities Development

The Sub-Committee recognises that the high cost structure of Singapore's infocomm industry does not allow the industry to compete head-on with lower-cost infocomm-producing countries such as India and China, and emerging ones such as Malaysia, Philippines and Vietnam.

However, the industry here can compete on value, premium services and niche solutions, which customers are willing to pay more for. To prepare our companies to play in these market spaces, their domain-specific capabilities need to be strengthened in areas where Singapore has a good track record of successful infocomm implementation. Examples of these domains are e-Government, Digital Media and Entertainment, and Education and Learning.

One way forward is to leverage on the IDA's cluster development efforts. For example, under the IDA's Backpack.NET¹³ initiative for the education sector, some local enterprises had developed leading-edge applications and had successfully sold their applications to overseas markets such as Australia, Indonesia, United States, Scotland and the Middle East. We need more of such success stories. Given the thrusts of iN2015 and the national emphasis on Interactive and Digital Media, Singapore's infocomm enterprises have many opportunities to develop innovative applications and services in domains such as Education and Learning, Digital Media and Entertainment, and Healthcare and Biomedical Sciences.

Singapore is noted for being one of the first countries in the world to have successfully deployed integrated end-to-end solutions for certain sectors, such as e-Government, trade and logistics, and transportation. With such expertise, local enterprises, though lacking in size, can forge partnerships with multinationals' counterparts to develop sectoral end-to-end solutions that are scaleable and replicable in other markets.

There are also opportunities for them to leverage on the 7,000¹⁴ or so multinationals, which have a presence here, to provide consultancy services on end-to-end solutions which the multinationals can adopt for their chain of companies worldwide.

To capitalise on these opportunities, Singapore needs to develop a pool of "techno-strategists" – "hybrid" infocomm manpower which is well-versed in technical aspects of infocomm as well as in their respective business domains.

Technology Capabilities Development

Infocomm enterprises need to strengthen their technology depth in niche areas where Singapore can excel. One way they can do this is by collaborating more closely with each other, as well as with research institutes and Institutes of Higher Learning (IHLs). This includes strengthening the linkages between the research institutes of the Agency of Science and Technology and Research (A*STAR) and the infocomm industry, which is in-line with A*STAR's Science & Technology 2010 plan.

These efforts will contribute towards identifying and developing infocomm technologies that meet the industry's needs. They will also lead to better transfer of intellectual property rights from the research institutes to the industry for the commercialisation of new applications and services. These efforts will support the Intellectual Property Creation Capability Programme under the iN2015 Infocomm Manpower Development Roadmap.

Besides developing intellectual property on its own, the industry can also source and acquire relevant intellectual property from around the world to shorten the developmental process. Technology depth can also be acquired by having the necessary platforms for the development of business applications. Focusing on intellectual property development and acquisition will help the industry move towards higher value-added activities. All these will create diversity in the industry, which is more sustainable in the long run.

13 The Backpack.NET initiative is to drive the piloting, development, research and showcasing of innovative infocomm technologies to create an eco-system for emerging technologies in education. Backpack.NET encourages student-centric learning through the use of tablet PCs, digital inking applications and other innovative infocomm technologies.

14 EDB counted over 7,000 multi-national companies across a wide range of industries, geographies and competencies (Information source: http://www.edb.gov.sg/edb/sg/en_uk/index.html).

As a start, the significant government investments in Interactive and Digital Media, next-generation national infocomm infrastructure, and infocomm security present unique opportunities for local enterprises to deepen their technology capabilities and test-bed their solutions in these niche areas.

At the same time, the industry cannot overlook the importance of “soft infrastructure”. **An Enterprise Capability Development Programme** will be established to assist local firms to develop business strategies, build management capability and human capital, improve processes and acquire technologies to compete in the global marketplace.

There will also be initiatives to help local companies pursue business development goals. These will be available to see them through start-up, product development, management capability and more. Specialised external advisors and experts will be engaged to identify projects that will benefit and nurture local enterprises. On top of that, it will look at setting up an international network of experts to mentor local companies.

The Sub-Committee recognises that Singapore businesses lack the culture of sharing experiences with fellow industry players, even though the nature of the infocomm business dictates that collaborations are the key to growth. With each company scaling the same learning curve on its own, it tends to make the same mistakes as those who have gone before it. To rectify this situation, an Industry Experience Sharing Platform will be set up to provide a neutral platform for like-minded enterprises to learn from one another and jointly explore opportunities to go international. With the creation of a user CXO Programme, as proposed by the Manpower Development Sub-Committee, there could be regular exchanges between senior executives to share their organisations’ experiences in infocomm adoption. This aims to inculcate awareness of infocomm technologies amongst the key decision makers and encourage the adoption of infocomm technologies in their organisations. This could in turn lead to opportunities for possible collaborations for pilots and trials with suitable infocomm suppliers and even deployment of infocomm solutions to showcase Singapore truly as a Living Lab.

The establishment of an Idea Generation Centre should also be considered. This would be a neutral

“Solutioning” facility to help various economic sectors understand how infocomm can be exploited. Consultants in the Centre will work with specific companies on how infocomm can create solutions to meet their business challenges and requirements. The Centre could be co-funded jointly by the government and industry.

Embark on a Concerted International Branding and Marketing of “Made-by-Singapore” Infocomm Products and Services

Local enterprises and their offerings currently lack strong recognition in both local and overseas markets. Many are small and do not have the know-how and financial resources to market themselves internationally. Marketing efforts in overseas promotions have also been disparate. Hence, there is a lack of international awareness and confidence in what Singapore has to offer.

To address this shortcoming, there will be a concerted national effort to develop a single brand for all Singapore’s infocomm enterprises and offerings, and to market this brand widely and aggressively.

The **“Made-by-Singapore” Infocomm Branding Programme** will benefit local enterprises by:

- Developing greater perceived value of Singapore’s infocomm products and services both within the Republic and in external markets.
- Generating stronger recognition of the quality and reliability of the country’s infocomm products and services.



This will involve:

- Establishing and marketing the “Made-by Singapore” brand at local and international industry-wide events.
- Conducting a feasibility study for Singapore’s infocomm industry endorsement mark.
- Profiling infocomm enterprises in the media, and through advertisements in regional publications and other collaterals.
- Developing an industry portal for “Made-by Singapore” infocomm products and services. Such a portal will be a virtual storefront for local enterprises to promote and market their products and services in Singapore and more importantly to the larger overseas markets. It will also serve as an additional channel for match-making complementary companies to create partnership opportunities.

Nurture the Expansion and Growth of Local Infocomm Enterprises

Strong local enterprises would help ensure the industry’s resilience and growth. However, before they can take off internationally, they must first have the resources to do so.

Efforts have already been made to help them deepen their capabilities. Beyond the existing efforts, an **iLE Internationalisation Programme** will be established to help local enterprises expand overseas.

One key initiative under this is to provide support services in markets that do not yet have an IDA overseas office. These services include:

- Provision of market intelligence. Local companies often lack the resources to gather market intelligence on potential leads or to follow up on leads in overseas markets. They can leverage on the IDA’s overseas offices and contacts with foreign governments or businesses to help gather market intelligence on potential business opportunities.

- Assistance in establishing overseas networks that can provide entry to overseas markets. These networks will provide support in the form of marketing channels and partners to help deliver solutions through Singapore enterprises. The networks can comprise local partners and multinationals with a strong presence in target markets, as well as Singapore Solutions Centres.

The Centres will serve as one-stop outlets for foreign companies and agencies wanting to find out more about the technologies, products and services that local companies can offer. They will also help to identify partnership opportunities for local enterprises and interested foreign companies to work together on deploying innovative infocomm solutions to meet the growing needs of the foreign markets.

With over two decades of exploiting infocomm to deliver innovative solutions for various economic sectors, especially in e-Government services, Singapore has built up a sizeable “war chest” of exportable sectoral solutions. Its highly successful e-Government implementations have gained wide international recognition, and its leadership in this area has consistently been ranked among the top few countries of the world by the World Economic Forum and Accenture. Local firms can capitalise on this to make their mark abroad by exporting e-Government solutions and secure such projects overseas.

To support this, an **e-Government Solutions Export Programme** will be established. This will involve:

- Setting up a Singapore e-Government Leadership Centre to provide training to foreign government officials on the Republic’s e-Government experience. The Centre can also serve as a vehicle to brand and market these software and IT solutions and local companies’ capabilities internationally. This complements strategies for iGov2010, an e-Government Action Plan for 2006 – 2010. One probable line of action here is to set up a global showcase to promote Singapore as a centre of excellence for such solutions. It will not only position the island as the place to live and work, but also seek to establish the Republic as a leader in infocomm usage.

- Making government-held intellectual property available to local enterprises to commercialise and export to foreign governments. This too is a part of the iGov2010 Action Plan, which among other things seeks to encourage government collaboration with the infocomm industry. By expanding their service offerings, companies here will have something solid to offer to overseas customers and this would help raise awareness of “Made-by-Singapore” products and services.

In addition to the iLE Internationalisation Programme and e-Government Solutions Export Programme, an **Enterprise Growth Programme** will be set up to provide access to capital to promising local enterprises which are looking for post-startup funding. Companies can use the fund to develop the necessary scale to compete in the global market.

Those who qualify for the fund are likely to have an established track record and would be seeking to expand more aggressively both here and overseas. The purpose in setting up this programme is strictly developmental in nature, directed at providing financial assistance for local companies to expand and grow.

Develop Sectoral Solutions for Export

Recognising the synergy that can be developed as a result of collaborations, the IDA has been encouraging partnerships between major infocomm enterprises and smaller ones through several programmes. One of them is the infocomm Local Industry Upgrading Programme (iLIUP), which promotes technology transfer, capability development and local customer reference sites. Another, the Overseas Development Programme (ODP), helps smaller enterprises make inroads into overseas markets through major infocomm enterprises’ networks.

To complement these efforts, the **Sectoral Projects Partnership Programme** will be put in place to expedite the creation of intellectual property for infocomm enterprises in Singapore and strengthen their branding in the international market. This programme aims to support efforts of infocomm

enterprises in Singapore to create larger-scale and iconic “reference sites”. Specifically, partnerships between local firms and multinationals will be established, so that they can work together on sectoral solutions for overseas markets. This programme will also support the efforts in helping the local industry develop domain and technology capabilities.

For a start, the partners can work on projects identified in the iN2015 Masterplan, such as those in e-Government, as well as the Digital Media & Entertainment and Education & Learning sectors. Such joint projects can be facilitated through the IDA’s cluster development efforts or led by major infocomm enterprises who are market leaders in the specific sectors.

Specifically, the Sectoral Projects Partnership Programme will:

- Incentivise the creation of intellectual property and the formation of consortiums and partnerships amongst enterprises to develop sectoral infocomm solutions.
- Facilitate the development of “Made-by-Singapore” exportable software and IT solutions, and leverage on Singapore’s strengths in rolling out infocomm solutions for various economic sectors.
- Create reference sites for our infocomm enterprises in their internationalisation efforts.



Attract and Nurture a Vibrant Pool of Infocomm Technopreneurs and Start-Ups

For Singapore's infocomm industry to be vibrant and thriving, it needs a continual influx of infocomm technopreneurs and start-ups that engage in high-end activities. These will help to rejuvenate the industry. The broader mix of enterprises and activities across the value chain will also create diversity in the industry.

Fortunately, the factors to support this development, such as infrastructure, strong laws protecting intellectual property and a pro-business environment, are already in place here. However, these strengths have to be monitored and enhanced to ensure that Singapore continues to be attractive to technopreneurs and start-ups in the face of intense regional competition for infocomm talent and investments.

An **Infocomm Start-Up Attraction Programme** will be developed to attract aspiring foreign technopreneurs to use Singapore as a development and engineering centre for their business ventures and as an operations hub for penetrating international markets. There are already various initiatives¹⁵ in Singapore that help promote entrepreneurship. This programme will leverage on these, as well as the IDA's overseas offices and the relationships that we have built with multinationals and major infocomm local firms, to attract technopreneurs and start-ups here.

A larger pool of start-ups is expected to drive more development of new products and services, and the creation of intellectual property. These should in turn attract more investments and venture capital to Singapore. At the same time, cross-pollination of knowledge and ideas between local and foreign technopreneurs will promote diversity in technology capabilities and spur innovation by the local industry.

¹⁵ Many of these initiatives are managed or offered by the Singapore Economic Development Board (EDB), the National University of Singapore (NUS), the Standards, Productivity and Innovation Board (SPRING) and the Action Community for Entrepreneurship (ACE).

CHAPTER 5

CONCLUSION

By 2015, infocomm will become even more important as an engine of growth for the Singapore economy as global connections increase and as infocomm affects every aspect of how we live, work, learn and play.

While the infocomm industry is facing rapid changes and stiffer competition from lower-cost countries, it is also offering new business opportunities and the potential to transform Singapore's economy and society.

Achieving the Sub-Committee's goal and targets for the infocomm industry requires the strong participation and support of infocomm companies here, industry associations, government agencies, Institutes of Higher Learning and research institutes.

The Sub-Committee would like to invite the people, public and private sectors to work closely with the IDA in these areas:

- Development of new initiatives that will transform Singapore's key economic sectors.
- Participation in the national "Made-by-Singapore" branding exercise.
- Engagement in the marketing platform to showcase infocomm products and services.
- Participation in the Enterprise Capability Development Programme.
- Development of new initiatives to penetrate into new emerging markets.
- Facilitation of strategic partnerships between multinationals and infocomm local enterprises.

Annex A: Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Strengths

- **Lead Adopter and Innovative Sectoral User of IT:** Singapore was ranked second in the World Economic Forum's Global IT Report for 2005-2006 for readiness and usage of infocomm in businesses, government and society. This ranking measures the general infocomm environment, the readiness of the three key stakeholders (individuals, businesses and governments) to use and benefit from infocomm technologies as well as their actual usage of such technologies. In addition, Singapore has consistently won global accolades for IT usage by the Government and its e-Government services. In March 2006, Singapore's household broadband Internet penetration and mobile penetration rates of 54.2 per cent and 100.8 per cent respectively are also among the highest in the world today.
- **Conducive Business Environment with more than 7,000 Multinationals in Different Sectors:** Singapore is recognised for its political stability and business-friendly policies. The World Bank's Doing Business Report 2006 ranked the Republic second in the world for ease of doing business, just after New Zealand. The indicators examine government regulation, the protection of property rights and the government's effect on businesses, especially small and medium-size domestic firms. The International Institute for Management Development (IMD) World Competitiveness Yearbook 2005 listed the island third – after the US and Hong Kong – based on these four indicators: economic performance, government efficiency, business efficiency and infrastructure. Singapore's political and economic stability makes it an attractive place for companies to set up their regional headquarters, despite relatively high manpower and living costs vis-à-vis the country's neighbours. This explains why more than 7,000 multinationals in diverse sectors have established their presence here.
- **Strong Intellectual Property Laws:** Singapore has established a strong regime for the protection of intellectual property, and is a signatory to major treaties for this. The Republic was ranked first in the region and fifth globally for intellectual property protection in the World Economic Forum's Global Information Technology Report 2005-2006. The International Institute for Management Development (IMD) World Competitiveness Yearbook 2005 also placed Singapore first in the region and seventh globally in intellectual property rights enforcement.

Weaknesses

- **Limited Domestic Market Size:** Endogenous growth is limited by Singapore's small and saturated domestic market. In 2004, India's and China's IT market grew by 21.7 per cent and 14.9 per cent respectively to become the fastest growing IT markets in the Asia-Pacific. In contrast, Singapore's grew by only 3.5 per cent¹⁶, reflecting the relative maturity of its IT industry.
- **Weak Entrepreneurial Culture:** The Global Entrepreneurship Monitor (GEM) 2005 survey¹⁷ highlighted social and cultural factors as key barriers to entrepreneurship in Singapore. Only 62 per cent of Singaporeans indicated they are not deterred by fear of failure compared to 64 per cent globally. 58 per cent believe that new business success is accorded with high status in this country, falling behind the OECD average of 66 per cent. Only 18 per cent of Singaporeans perceived good start-up opportunities within the next six months – less than half the global average of 38 per cent and OECD average of 37 per cent. Notwithstanding the fact that Singaporeans are not as entrepreneurial compared to those from OECD countries, these sentiments may be set to change as the 2005 GEM report shows that early stage entrepreneurial propensity levels in Singapore rose from six per cent in 2004 to seven per cent in 2005 – our highest ever since our participation in GEM in 2000. Our improvement in Total Entrepreneurial Activity rate has outpaced that of developed OECD countries. This raised our relative ranking among the OECD countries from 11th in 2004 to 8th out of 20 in 2005.

16 "What's Happening at the IT Coalface", IDC Presentation by Peter Hind, Senior IT Management Analyst, October 2005.

17 "Global Entrepreneurship Monitor (GEM) 2005 Singapore Report", NUS Entrepreneurship Centre, National University of Singapore, February 2006.

- **Weak Venture Capital (VC) Funding:** According to Singapore's Economic Development Board (EDB) survey of VC industry in Singapore, although Singapore was ranked among the top OECD countries for informal investments, a very small percentage of new businesses here received formal VC funding in 2004¹⁸. Singapore was ranked 17 out of 21 countries with a VC/GDP ratio of 0.08 per cent (compared to average of 0.125 per cent for all countries) in the GEM 2005 survey. Although infocomm companies made up about 32 per cent of those that received VC funds in Singapore in 2004, its share of total dollar value of VC investments has been falling substantially from 38 per cent in 2002 to 19 per cent in 2003 to only 11 per cent in 2004. VC funding for infocomm pales in comparison to the biotechnology and industrial products sectors in Singapore, which received 30 per cent and 17 per cent of the total VC funds respectively in 2004.
- **Lack of R&D, Intellectual Property Creation and Exploitation:** Only a few multinationals conduct their research and development activities in Singapore. More can be done to foster further collaborations between the multinationals and the research institutes here in this area.

Opportunities

- **Growth of IT-enabled Services:** Global infocomm companies are seeing a shift in focus from pure IT products and services into higher-value IT-enabled services. An example is Business Process Outsourcing (BPO), which involves transferring entire business functions to an external service provider to manage, in order to align the company's operational aspects with its business strategy. In the Asia-Pacific – excluding Japan – spending on these sorts of services exceeded US\$6 billion in 2005. The market is expected to rise to about US\$14 billion by 2010 at a CAGR of about 18 per cent¹⁹.
- **Growth in IT Spending in Small and Medium-sized Enterprise (SME) Market in Asia:** Overall spending on IT by Asian SMEs crossed US\$50 billion in 2004. IDC expects IT spending by Asian SMEs to grow at a CAGR of 7.3 per cent from 2005-2009. With the increase in IT spending by Asian SMEs, this presents a substantial market for Singapore's infocomm enterprises to tap into²⁰.
- **Increased Spending on Infocomm by the Public Sector:** The public sector represents one of the most sustainable and lucrative IT markets within the Asia Pacific. The IDC expects the amount that this sector will spend on IT to grow at a CAGR of 6.2 per cent between 2004 and 2009²¹. Part of this growth will be driven by developed economies' efforts to explore new avenues for e-governance and IT-driven efficiency. This growing regional interest offers a major opportunity for Singapore to export its e-Government solutions.

Threats

- **Competition from Lower-cost Countries in the Region:** Singapore faces strong competition in the provision of hardware, software and services from lower-cost markets. According to AT Kearney's 2004 Offshore Location Attractiveness Index, Singapore was in the fifth position while India, China and Malaysia took the top three spots²². India topped the index by a wide margin, due to its strong mix of low costs, deep experience in offshoring experience and plentiful labour. Despite trailing India in language skills and experience, China came in second, due to a similar combination of low cost and a large, educated labour force. In addition, China has become the factory of the world, attracting huge foreign direct investment. In fact, it overtook Luxembourg to become the world's third largest recipient of foreign direct investment in 2004, according to the United Nations' World Investment Report 2005 – after the US and UK. Foreign direct investments into China grew 13 per cent from 2003 to reach US\$61 billion in 2004²³.
- **Misconception of Infocomm Career:** The infocomm career appears to be losing popularity among local students. This declining interest has been attributed to the perception that infocomm jobs are technical and unglamorous. And despite several success stories in the profession, the bursting of the dotcom bubble and wide reporting of job losses from outsourcing have fuelled the negative perception of infocomm as a career among students, parents and career counsellors.

18 "Global Entrepreneurship Monitor (GEM) 2005 Singapore Report", NUS Entrepreneurship Centre, National University of Singapore, February 2006.

19 "Asia/Pacific (Excluding Japan) Business Process Outsourcing 2006-2010 Forecast and Analysis", IDC, March 2006.

20 "Asia/Pacific IT Spending 2005-2009 Forecast", IDC, February 2006.

21 "Asia/Pacific Public Sector IT Spending 2005-2009 Forecast", IDC, November 2005.

22 "Making Offshore Decisions", A.T. Kearney's 2004 Offshore Location Attractiveness Index, 28 November 2005.

23 "Transnational Corporations and the Internationalization of R&D", United Nations Conference on Trade and Development (UNCTAD) World Investment Report 2005, 29 September 2005.

Annex B: iN2015 Enterprise Development for Singapore-based Infocomm Companies Focus Group Members

Name	Designation
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Mr Steven Chan	Chairman novaCitynets Pte Ltd
Mr Eddie Chau	President & Chief Executive Officer e-COP Pte Ltd
Mr Bradley Chew	Managing Director (South Asia) JAFCO Investment (Asia Pacific) Ltd Council Member Singapore Venture Capital & Private Equity Association.
Mr Foong Kam Tho	President ECS Computers (Asia) Pte Ltd
Mr Ho Lye Sum	Former General Manager Dell Singapore Pte Ltd
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Name	Designation
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Mr Leslie Loh	Executive Chairman and Chief Executive Officer System Access Ltd
Mr Neoh Kok Cheng	Chief Executive Officer Atos Origins (S) Pte Ltd
Mr John Phipps	Governmental Programs Executive IBM Singapore Pte Ltd
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Mr Seah Chin Siong	Country Managing Director Accenture Pte Ltd
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Mr Wilson Tan	Former President Asia Pacific & Japan Mercury Interactive (S) Pte Ltd
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Mr David Wynne	Partner Upstream Ventures Pte Ltd
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Mr Thomas Yeoh	Managing Director & Chief Executive Officer Boardroom Ltd
Mr Yong Inn Nam	Chief Executive Officer ESS Software Pte Ltd

Annex C: IDA Secretariat for iN2015 Enterprise Development for Singapore-based Infocomm Companies Sub-Committee

Name	Designation
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Infocomm Development Authority of Singapore

IDA is committed to growing Singapore into a dynamic global Infocomm hub. IDA uses an integrated approach to developing info-communications in Singapore. This involves nurturing a competitive telecoms market as well as a conducive business environment with programmes and schemes for both local and international companies.

For more information, visit www.ida.gov.sg

Singapore Computer Society

SCS, established since 1967, is the premier professional body for IT practitioners and IT users in Singapore. With a membership of over 22,000, it is an invaluable network for its members. SCS administers various certification programmes that help individuals gain professional recognition for career development.

For more information, please visit their website at www.scs.org.sg

Singapore infocomm Technology Federation

SITF is Singapore's national infocomm industry association. It brings together 500 corporate members from MNCs and local companies, who collectively account for over 80% of the industry revenue. The SITF assists its members in business development, market intelligence, overseas trade missions, networking and alliances.

For more information, please visit their website www.sitf.org.sg

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