iDA INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

ANNUAL REPORT 2002 / 2003

Search: Singapore Infocomm

connect

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If information were the lifeblood of the infocomm society, then connectivity would be the vessels through which it flows. From government to citizens, from businesses to communities, from corporations to consumers, smooth information flows help to keep the world alive and evolving at this digital age. A robust infrastructure forms the foundation on which we communicate among ourselves, and with the world, allowing us to explore new opportunities and transforming the face of business. Connectivity leads us to a whole new world of convenience and lifestyle where virtually everything is available at the click of a mouse or button.

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Vision and Strategies Search

VISION

CONNECTED SINGAPORE

Unleashing potential, realising possibilities, through Infocomm

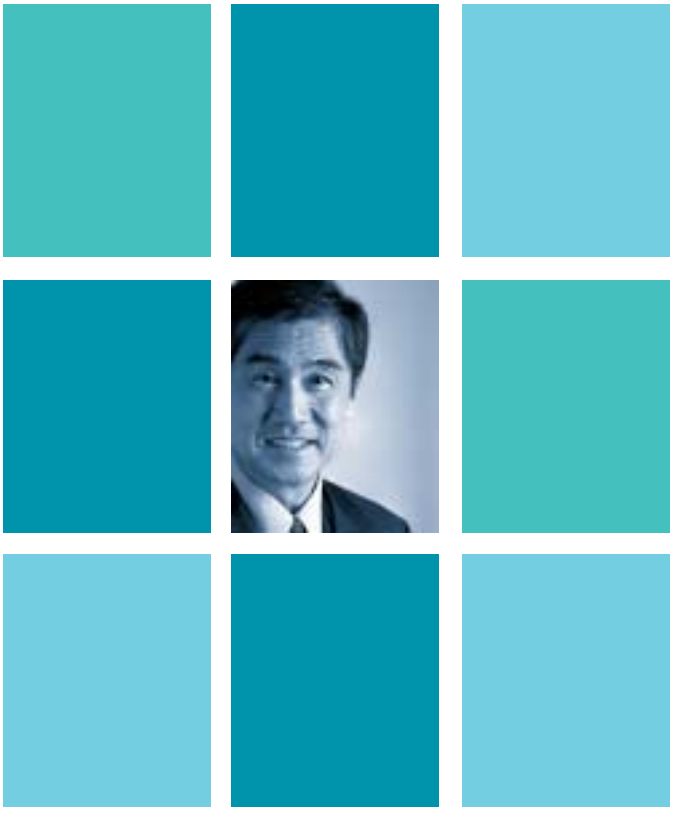
STRATEGIES

>> Infocomm for Connectivity, Creativity and Collaboration

>> Digital Exchange

>> Engine of Growth

>> Agent for Change



Despite many challenges, Singapore's infocomm sector showed positive growth in 2002. The industry grew by 5% and the total infocomm revenue increased from S$30.7 billion (US$17.5b) in 2001 to S$32.2 billion (US$18.4b) in 2002.

To maintain the momentum of growing the sector, *IDA* continued to push ahead with its initiatives and plans. In the past year, some key initiatives included:

- Lifting of the local incorporation qualifying criteria from all Service Based Operator (SBO) licences and certain categories of Facilities Based Operator (FBO) licence applications for foreign companies.This helped to lower the market entry barrier for foreign businesses, thereby encouraging further competition in the Singapore telecom market.

- Negotiations on the infocomm components in the US-Singapore Free Trade Agreement (FTA) and the Australia-Singapore FTA, which, among other terms, eliminated tariffs on ICT products. These agreements will serve to increase trade flows between Singapore and two of our most important trading partners.

- Strategic collaborations with MNCs like *Microsoft* (to launch the .NET MySingapore Web Services initiative), *Sun Microsystems* (to develop next generation Internet Appliances), and *Intel Corporation* (to promote seamless connectivity between the fixed and wireless worlds). This helped to facilitate technology exchange and foster innovation.

- Technical trials in key emerging technologies like Free Space Optics, Next-Generation Wireless LAN and Ultra-Wideband. These trials help to assess the feasibility of deploying such technologies for future use.

- Integrating more government services to be delivered online. To date, the public can access more than 1,500 government services through the eCitizen portal, which has seen its hit rate increase from 240,000 to 4.2 million per month over the past year.

- Propagating a more technology savvy population through public education and specific training schemes like the National IT Literacy Programme and the E-business Savviness Programme. Today, 47% of Singapore's population aged between 15 and 69 know how to use the computer and can perform at least one form of online transaction.

To further spur infocomm growth over the next 3 years, a new blueprint, Connected Singapore, has been put in place. It is to guide *IDA* in working with the infocomm industry to create wealth and generate jobs for the economy. It has four broad strategies:

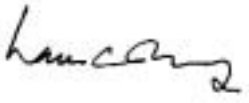
- First to leverage on existing network readiness and capabilities for wireless pervasiveness, developing content and promoting infocomm literacy. The Wired With Wireless programme is one such example of our efforts to promote wireless connectivity.

- Second to develop Singapore as a leading global digital distribution and trading centre. *IDA* aims to attract top class digital publishing or software companies to hub their regional distribution operations in Singapore.

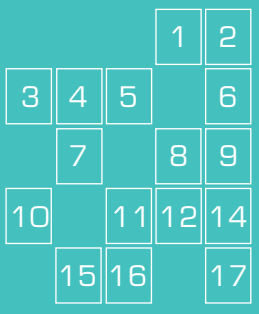
- Third to look to create new economic activities and jobs in the infocomm sector through developing innovation capabilities, encouraging technology development and expanding access to overseas markets. *IDA* aims to increase the GDP contribution of the infocomm industry to 10% of GDP by 2012. To achieve this, it has identified five specific clusters in the infocomm sector that offer high growth potential for Singapore. They include web services (to be pursued under the WEAVE programme); value-added mobile services; infrastructure for wireless and wired networks; multimedia processing and management; and security and trust infrastructure.

- Fourth to assist businesses and government agencies in using infocomm technology to re-engineer their business processes for greater productivity. *IDA* will implement the next phase of the e-Government Action Plan for the period FY2003 – FY2005, which focuses on the delivery of accessible, integrated and value-added public services to its customers, and ways to foster interaction and engagement between government and citizens.

The past year has been an eventful and challenging one. We have done well only because of the strong support and cooperation of the industry, associations and other agencies. I would like to thank them for their cooperation. I would also like to thank our *IDA* staff for their dedication, commitment and perseverance in their field of work. Finally, I want to thank my fellow Directors on the Board for very selflessly devoting so much of their precious time and energy to help *IDA*.



Lam Chuan Leong
Chairman, IDA



01 Lam Chuan Leong *Chairman*
Permanent Secretary
Ministry of Environment

02 Peter Ho *Deputy Chairman*
Permanent Secretary
Ministry of Defence

03 Boon Swan Foo
Managing Director
*Agency For Science, Technology and Research (A*STAR)*

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Accenture

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National Library Board

06 Prof. Arnoud De Meyer
Deputy Dean
INSEAD

07 Rupert G Keeley
President & CEO
Visa International
Asia Pacific Region

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Second Solicitor-General
Attorney-General's Chambers
(effective 11 January 2003)

09 Leong Wai Leng
Deputy Chief Executive Officer
Finance & Investments
Raffles Holdings Limited
(effective 11 January 2003)

10 Lim Hock Chuan
Chief Executive Officer
Media Development Authority

11 Leslie Loh
Founder/Chairman
System Access Pte Ltd

12 Low Check Kian
Chairman
Infocomm Investments Pte Ltd

13 Ong Peng Tsin *(Not in picture)*
President & Chief Executive Officer
Encentuate Pte Ltd
(effective 11 January 2003)

14 Charles Ormiston
Managing Director
Bain & Company SE Asia, Inc

15 Saw Ken Wye
General Manager
Network Service Providers (Asia Pacific & Japan)
Microsoft Operations Pte Ltd
(effective 11 January 2003)

16 Seng Han Thong
Assistant Secretary-General
National Trades Union Congress

17 Tan Ching Yee
Chief Executive Officer
Infocomm Development Authority of Singapore

18 Jane Crawford *(Not in picture)*
Managing Director (Asia Pacific)
3i Investments PLC
(until 31 August 2002)

19 Antonio Romero *(Not in picture)*
General Manager
IBM Singapore Pte Ltd (ASEAN, South Asia)
(until 6 May 2002)

MEMBERS OF IDA SUB-COMMITTEES

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Willie Cheng
Leslie Loh
Charles Ormiston
Tan Ching Yee

FINANCE SUB-COMMITTEE
Low Check Kian, Chairman
Rupert G Keeley
Lim Hock Chuan

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02 **Leong Keng Thai** *Deputy Chief Executive/Director-General*
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03 **Wu Choy Peng** *Assistant Chief Executive*
Government Systems

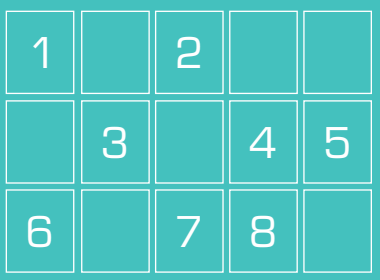
04 **Khoong Hock Yun** *Assistant Chief Executive*
Infocomm Development

05 **Dr. Brian Chen** *Chief Technology Officer*
(until 16 July 2003)

06 **Andy Haire** *Senior Director*
Policy & Regulation

07 **William Hioe** *Senior Director*
Strategic Planning & International

08 **Philip Heah** *Senior Director*
Online Development



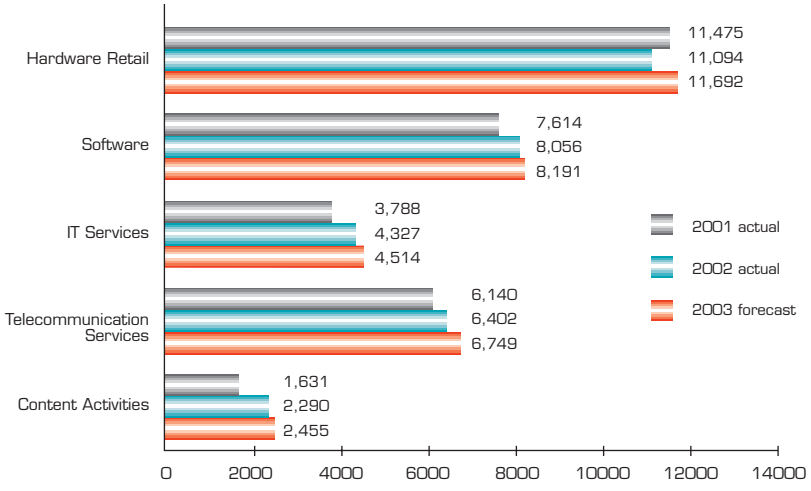
Infocomm technology has become an integral part of everyone's lives, be it used at work, play or in learning. The following charts and statistics are testament to the infocomm growth in Singapore in 2002.

TOTAL INFOCOMM INDUSTRY REVENUE BY PRODUCTS AND SERVICES (S$ MILLION)

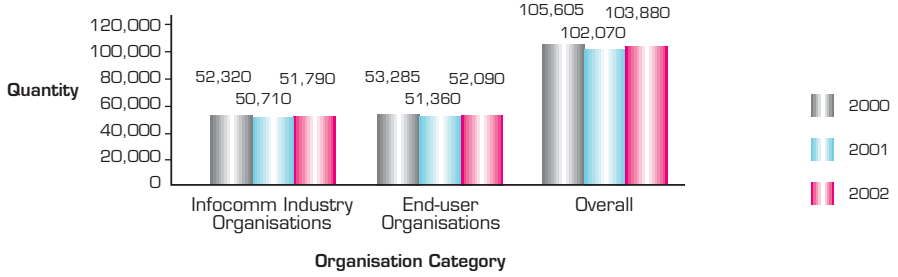
Total Infocomm Industry Revenue	
2001 actual	- $30,649 million*
2002 actual	- $32,169 million
2003 forecast	- $33,602 million

Source: Annual Survey on Infocomm Industry 2002

* A different methodology was adopted in this survey as compared to the survey for 2001. In particular, the extrapolation method used differed in terms of the treatment of organisations which contributed significantly to the overall performance of the industry. To set a new baseline, the 2001 data was recollected and recomputed under this survey for 2002.



NUMBER OF EMPLOYED INFOCOMM MANPOWER FOR 1999 - 2002



Source: Annual Survey on Infocomm Manpower 2002

OUR CONNECTED LIFESTYLE TODAY...

79.2% of Singapore residents are mobile phone subscribers[1]

52% of mobile phone subscribers use SMS more than once a day[2]

68.4% of households in Singapore own a PC[3]

42% of Singapore residents use Broadband Internet[4]

24.2% of households in Singapore have broadband access[5]

13% of Singapore's working population telecommute[6]

Footnote

1 Latest penetration rate as at April 2003. *IDA* website statistics on telecom services

2 Mobinet Survey by *A.T. Kearney* & the *University of Cambridge*, March 2002

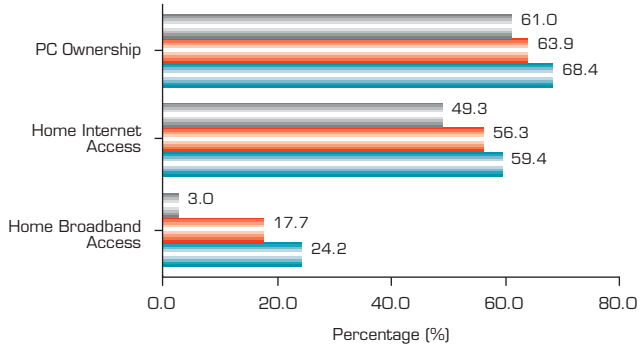
3 Infocomm Usage in Households Survey 2002

4 Broadband & Wireless Usage Survey 2002

5 Infocomm Usage in Households Survey 2002

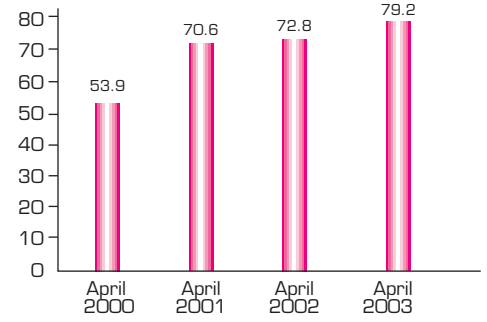
6 Broadband & Wireless Usage Survey 2002

INFOCOMM USAGE IN SINGAPORE HOUSEHOLDS



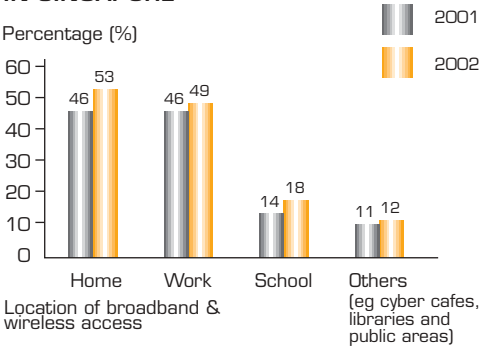
Source: Survey on Infocomm Usage in Households & by Individuals 2002

MOBILE PHONE PENETRATION RATE IN SINGAPORE



Source: *IDA* website>Infocomm Facts & Figures>Statistics on Telecom Services

BROADBAND & WIRELESS USAGE IN SINGAPORE



Source: Survey on Broadband & Wireless Usage in Singapore 2002

TOP 10 APPLICATIONS USED BY BROADBAND USERS

1	Email	94%
2	Information Retrieval/Search	54%
3	Instant Messaging	44%
4	Offline Music	40%
5	Online Chat	38%
6	Download/Update Software Applications	35%
7	Online Shopping	34%
8	Internet SMS	29%
9	Online Banking	26%
10	Play Online Games	21%

Source: Survey on Broadband & Wireless Usage in Singapore 2002

[1 November 2002]
IDA signed a Memorandum of Understanding with the *Shanghai Informatisation Office* to promote closer cooperation and bilateral exchange of ICT information.

[10 February 2003]
IDA hosted a Country Forum at NASSCOM 2003 in Mumbai to share experience on e-Government.

[5 March 2003]
IDA signed a Memorandum of Intent with *Intel Corporation* for the IDA-Intel Wireless Hotspots & Network Interworking Initiative, the world's first initiative to develop seamless connectivity across Asia.

[17 February 2003]
IDA plays a leading role in negotiating the ICT components of Singapore's Free Trade Agreements. On 17 February 2003, Singapore signed a FTA with Australia to catalyse increased trade flows. It signed a similar FTA with the United States in May 2003. The FTAs also serve to take existing bilateral ties to new levels of co-operation and partnership.

[9 April 2002]
IDA signed a Memorandum of Intent with *Microsoft* to develop .NET MySingapore, the world's first nationwide, community-based web services.

[19 March 2003]
IDA joined hands with *Sun Microsystems* to launch Java Tarik ONE. This collaboration focuses on capability development, market development and market access for Next Generation Internet Applications (NGIA).

IDA **plays an active role in promoting, developing and regulating info-communications in Singapore, with the aim of establishing Singapore as a premier infocomm capital. It seeks to achieve this through various international efforts, collaborations with the industry, and programmes to build an infocomm-savvy and connected society.**

[15 May 2002]
IDA published the "Spectrum Management Handbook" and "National Numbering Plan" to provide greater regulatory transparency and industry understanding of the nation's radio frequency spectrum management and numbering plan.

[14 - 16 March 2002]
IDA launched Wireless Month in conjunction with Wireless Mobility Experience 2003. Wireless Month aims to promote awareness and increased usage of wireless applications and services for consumers and enterprises.

[30 August 2002]
IDA organised the Infocomm Literacy Month and the Great Singapore Surf (GSS), a three-day mass training event. Former Acting Minister (MITA) David T.E. Lim was the guest-of-honour at the event launch.

[16 March 2002]
IDA and other public and private organisations launched the eCitizen Helper People-Private-Public(3P) Programme. The programme deploys eCitizen Helpers to guide users in accessing government services online at specific Helper Centres.

The Singapore Connection
- Building an Infocomm Hub

In 2002, the infocomm revenue totalled S$32.2 billion (US$18.4b) in Singapore, up from S$30.7 billion (US$17.5b) in 2001. This was an encouraging sign that pointed to the strong fundamentals of the industry in spite of the general global economic slowdown. *IDA's* key focus is to cement Singapore's position as an infocomm hub by maintaining an open and competitive environment for businesses to grow, developing the city state's infrastructure for increased connectivity, as well as bridging connections through various international efforts.

Singapore maintains a high level of regional and international telecommunications connectivity to over 100 countries, with direct Internet connections to 30 countries and more than 90Mbps connectivity to each key regional market such as Japan, China, India, Korea, Taiwan, Hong Kong and Australia. An extensive network of submarine cable systems links Singapore to Europe, North America and the world, with 21 Tbps (tera bits per second) of submarine cable capacity. In addition, Singapore is the only country in the world to have direct high capacity submarine cable connectivity to the two largest markets in Asia, India and China.

Maintaining Open and Competitive Business Environment

Since liberalising the telecom market in April 2000, Singapore has attracted more than 30 facilities-based operators (FBOs) and 600 services-based operators (SBOs) who provide a diversity of infocomm services to businesses and consumers.

In March 2003, *IDA* revised the licensing requirements for the SBO and FBO licences to boost competition. It lowered the market entry barrier for foreign businesses by lifting the local incorporation qualifying criteria from all SBO licences and certain categories of FBO licence applications.

To ensure fair competition, *IDA* sets ground rules to pre-empt anti-competitive practices. *IDA* promotes industry awareness of policy decisions and regulatory actions, through publicising its regulatory decisions on infocomm issues. The *World Economic Forum 2001* identified Singapore as having the most transparent business practices in the world – and the lowest drag on capital costs. To maintain Singapore's reputation for transparency, *IDA* released its Spectrum Management Handbook and National Numbering Plan in May 2002.

IDA also regularly seeks public and industry views and feedback on its policies and regulations in order to maintain an open environment. Such communication channels come in the form of publicly released consultation and draft papers. For example, *IDA* released a public consultation paper in November 2002 to gather views on its proposed Voluntary Code of Practice for pre-paid international telephone card services. Other examples of such public feedback includes the proposed consolidation involving *StarHub* and *SCV* in May 2002, as well as a review of the interconnection charging model proposed for Internet dial-up traffic in April 2002. Through this review process, *IDA* aims to incorporate industry and public views in its decision-making process and ensure that its policies are relevant in the global marketplace.

Establishing a Robust Infocomm Infrastructure

The high level of telecommunications connectivity has led to the setting up of the world's second and Asia's first neutral peering point for GPRS Roaming in Singapore. In February 2003, facilitated by *IDA*, leading international GPRS Roaming Exchange (GRX) providers such as *Aicent Inc., Belgacom SA, Reach Global Services Ltd* and *Sonera* signed a Memorandum of Understanding (MOU), where the GPRS mobile operators can interconnect their networks by connecting to a dedicated IP-based and secured network. Being a Peering Point not only entrenches Singapore's position as an infocomm hub, but also provides Singapore with a first-mover advantage in being the hub for all GPRS and future 3G data traffic. In addition, there will be potential for the local wireless developers to develop more applications and services to support the growth in data roaming services.

Singapore boasts a broad range of Business Continuity (BC) and Disaster Recovery (DR) services and a ready pool of certified BC / DR professionals. It is the first country outside North America to provide a full spectrum of professional training programmes. In addition, Singapore houses a large data centre that offers world-class capabilities with high availability, security and service level quality.

TELECOMMUNICATIONS PENETRATION RATES IN SINGAPORE

Market Segment	April 2002		April 2003	
	Number of Subscribers/Lines	Penetration Rate*	Number of Subscribers/Lines	Penetration Rate*
Fixed Line	1.947m	47.1%	1.923m	46.2%
Mobile	3.005m	72.8%	3.296m	79.2%
Paging	409,800	9.9%	242,700	5.8%
Internet Dial-up**	1.948m	47.2%	2.032m	48.8%

* Penetration rates are computed based on the total population figures released by the Department of Statistics.

** The dial-up market penetration figures include the following subscribers :(i) subscription-based subscribers for all IASPs; and (ii) free Internet access subscribers.

Growing New Business Opportunities

To enhance greater connectivity, *IDA* also worked with the industry to explore and harness the latest software and hardware wireless technologies. This helped to grow new business opportunities and create new jobs in the infocomm industry.

IDA CEO Tan Ching Yee (left) and President, Chairman and CEO of Sun Microsystems Scott McNealy at the launch of Java Tarik ONE and "The Next Big Thing in Technology" talk

Following the success of the Java Tarik initiatives since 1997, *IDA* and *Sun Microsystems* launched Java Tarik ONE (Java TONE), in March 2003. Java TONE focused on capability development, market development and market access for Next Generation Internet Applications (NGIA). The programme develops competencies in the local infocomm workforce and encourages innovation in emerging technologies for NGIA.

Wireless Java Jam

The ASEAN Java Competency Project (AJCP) is another collaborative effort between *IDA* and *Sun Microsystems*. The AJCP facilitates cross-border cooperation between infocomm companies and research institutes, such as the ASP Centre and the Java Wireless Competency Centre. The project aims to develop a regional hotbed for Java-based technology and business across various ASEAN countries. In 2002, two Java Centres – Java Business Resource Centre and Java Research & Development Centre were established in the Philippines.

The Wireless Java Jam is the first student development programme to create a pool of student developers and generate compelling wireless Java applications. It also aimed to facilitate the growth of wireless infrastructure for the delivery of richer multimedia content.

Recognising the huge potential of XML web services, *IDA* worked with key technology partners to position Singapore as a cultivation centre for web services. *IDA* and *Microsoft* launched the first nationwide, community-based web services initiative - .NET MySingapore in April 2002. This project harnesses the potential of web services to offer community-oriented services, build new infocomm skills and knowledge and kickstart new business avenues.

IDA CEO Tan Ching Yee (front row, first from left) with iLIUP MNC representatives at the iLIUP Recognition Event

Through the *IDA-Intel* Wireless Hotspots & Network Interworking Initiative, signed in March 2003, *IDA* and *Intel Corporation* had paved the way for seamless connectivity for fixed and wireless worlds in Asia. The collaboration is the first of its kind in the world to involve the participation of operators and vendors from Asia-Pacific and beyond. Public wireless local area network users will be able to enjoy the same seamless mobility and connectivity as today's mobile phone users.

The infocomm Local Industry Upgrading Programme (iLIUP), a programme aimed at facilitating technology exchange by partnering local infocomm companies with MNCs, saw six new MNCs and 92 local companies coming on board in 2002. With 22 MNCs and more than 200 local companies in the programme, effective partnerships have resulted in the development of more than 120 infocomm products and services to date.

Representatives of the Connected Homes Programme at the "Connecting the Homes" Call-for-Collaboration

Encouraging Trials for Applications and Services

To develop more infocomm applications and services for the consumer, industry players combined resources to test and implement open and scalable solutions by participating in several Calls for Collaboration (CFCs) initiated by *IDA* during the year.

In March 2003, the results for the first CFC, the Mobile Payments (m-payments) CFC, were released. Four of the five trials went commercial. They included YW8 and Go Virtual which would be commercialised by *NETS*, TeleMoney by *Systems@Work* and Blink by *Mobile Solutions and Payment Services*. These trials are backed by the respective consortium comprising banks, mobile operators, service providers, technology providers and merchants. The trial of 11 types of new m-payment services not only encouraged initial consumer usage but also contributed to the capability development and employment in the area of wireless and m-commerce.

Another significant achievement is the Mobile Workforce Solutions CFC. 20 consortia were awarded support on 15 May 2002 to conduct trials of proposed solutions for a mobile workforce, that is to trial solutions that take advantage of the mobility offered by wireless technologies for sales and field forces automation, supply chain management, resource planning and remote monitoring. The CFC resulted in the development of 32 products and services, which are expected to generate revenues of some S$40 million (US$23m) over the next two years.

In addition, on 15 May 2002, six consortia were selected to undertake trials in wireless Java to develop applications using J2ME-based wireless Java technology.

The Application Service Provider Aggregator (ASPA) CFC facilitated communication and integration of applications between business partners. In November 2002, three consortia were awarded support for trials of their proposed ASPA solutions. When completed, successful trials will create the "enabling infrastructure" essential for the management of web services.

In April 2002, the Connected Homes Programme was announced to provide a test-bed environment for the industry to jointly develop and pilot innovative and integrated solutions for the homes and community. Shortly after, the "Connecting the Homes" CFC was implemented. In January 2003, *IDA* selected five consortia, consisting of 32 international and local companies, to develop and test their solutions in more than 400 households.

In July 2002, *IDA* launched the 'Wireless Challenge' competition, which encouraged local development and production of wireless LAN and mobile wireless products. The aim was to stimulate local creativity and innovation

A FastTrack@School exhibition to promote usage of interactive broadband multimedia content

and promote pervasive adoption of wireless technologies. A total of 129 innovative entries were received and the winners were announced at the Wireless Experience 2003 in March 2003. Two of the winning entries included Autoshop by the *National Technological University* which made use of WLAN technology to provide a solution to a supermarket automation system and explore a host of web services and cross platform applications; and Tele-Echo by *Meta Concepts* that provides English-Chinese language translation for short message services (SMS).

The three-year pilot under the *FastTrack@School* programme which concluded in September 2002, saw more than 200 schools starting to use interactive broadband multimedia content for teaching and learning. The industry partners also successfully launched six new products with numerous overseas ventures. Most importantly, the schools and students have benefited from teaching and learning on broadband, as shown from the results.

Identifying and Testing New Technologies for the Future

In order to maintain Singapore's edge as a leading technology hub, *IDA* keeps abreast with worldwide infocomm developments through identifying, testing and adopting new technologies strategic to Singapore. The annual Infocomm Technology Roadmap (ITR) serves to chart the vision, trends and developments of the technology landscape for Singapore over the next five years. The 4th Infocomm Technology Roadmap held on 26 November 2002 focused on the areas of Mobile Wireless, Broadband Access, Home Connectivity, and Infocomm Security Technologies in E-commerce. Through a Technology Bets process where *IDA* identifies and facilitates the adoption of new technologies, *IDA* shortlisted 15 technologies as its key Technological Bets, which included Free Space Optics (FSO), Next Generation Wireless LAN (NGWLAN) and Ultra-Wideband (UWB). Outdoor field trials of these technologies were carried out with industry partners and government agencies to obtain an independent assessment and study the feasibility of adoption within Singapore.

A panel of IDA and infocomm leaders at the Infocomm Technology Roadmap Seminar

FSO is known as a cost-effective and easy-to-deploy network communication technology option, albeit with spatial limitations and restrictions. A field test to study the feasibility and reliability of FSO technology was completed by June 2002. The growing popularity of WLAN also prompted *IDA* to engage the *Nanyang Technological University of Singapore* and *RFNet Technologies Pte Ltd* for the technical trial of NGWLAN. This trial aims to provide a test bed to evaluate the NGWLAN technology and to create awareness and provide deployment recommendations. The field trial results of FSO and NGWLAN were shared at the 4th ITR.

The development of UWB technology is also closely watched by *IDA*, which launched a two-year Singapore UWB Programme on 25 February 2003. *IDA* is conducting a series of compatibility studies to generate data that will form the basis for future rule-making and subsequently, establish its appropriateness for Singapore.

Forging Strategic Alliances Overseas

In developing Singapore to be a key regional infocomm hub, *IDA* continued to build government-to-government and industry-to-industry linkages abroad. *IDA* has facilitated closer cooperation with our major economic partners, the United States and Australia and established new ties with China.

IDA has played a leading role in negotiating the ICT components of Singapore's Free Trade Agreements (FTAs). Over the past year, two landmark FTAs were concluded with the United States and Australia. Under these FTAs, *IDA* negotiated commitments to lower trade barriers on ICT services. Important successes include regulatory disciplines to prevent anti-competitive conduct by major telecommunications suppliers and a Mutual Recognition Agreement on Conformity Assessment for Telecommunication Equipment.

In addition, under the the US-Singapore FTA, *IDA* negotiated for commitments which allowed Singapore telecommunications manufacturers to bid for US Government contracts on a non-discriminatory basis; e-commerce provisions ensuring zero tariffs for online services and non-discriminatory treatment for digital products from Singapore companies; and limited liability for intellectual property infringements by Internet service providers, subject to some conditions.

These agreements will bring about increased trade flows between Singapore and two of our major trading partners. They also serve to take existing bilateral ties to a new level of cooperation and partnership.

The Singapore booth at Bangalore IT.Com 2002

To promote infocomm cooperation between Singapore and China, *IDA's* Shanghai Office opened in July 2002 as the Infocomm Section under the Consulate-General of the Republic of Singapore. *IDA* signed a MOU with the *Shanghai Informatisation Office* to encourage and facilitate collaboration between Singapore and Chinese infocomm companies. In addition, *IDA* led missions to cities such as Beijing, Shanghai, Guangzhou, Hangzhou, Shaoxin and Ningbo, to participate in exhibitions and meet potential partners and customers. There was also a jointly-organised forum with the *Shanghai Informatisation Office* on E-Logistics, held in March 2003 in Shanghai, which allowed Singapore e-Logistics players to present their capabilities and network with potential Chinese customers and business partners.


IDA shared experience on e-Government at NASSCOM 2003 in Mumbai

IDA's Bangalore Office was also active in promoting the Singapore infocomm industry to India. In October 2002, *IDA* and several local infocomm companies participated in BangaloreIT.com, one of the largest IT events in India. The companies demonstrated their services and applications under the banner of the Singapore Pavilion. *IDA* also led a group of Singapore infocomm companies to participate in the NASSCOM Annual Event in Mumbai in February 2003, where they shared Singapore's e-Government experiences between the government and the industry. NASSCOM is an industry organisation which represents the software industry in India.


The IDA booth at ITU Telecom Asia 2002

Similar opportunities were created at the ITU Telecom Asia show in Hong Kong in December 2002 and the 3GSM World Congress in Cannes in February 2003. In March 2003, a trade delegation from the *Singapore Information Technology Federation (SITF)* launched the "Made in Singapore" Roadshow in Bangkok, Thailand, which showcased the capabilities of Singapore infocomm companies. *SITF* delegates met with their counterparts from the *Association of Thai Computer Industry (ATCI)* and outlined opportunities for greater Thai-Singapore ICT collaborations.


The IDA booth at 3GSM World Congress in Cannes

Connecting Within Asia

'Connected Asia' is the vision of a pan-Asian IT grouping that would harness the strengths of complementary pockets of IT excellence in the region. *IDA*, with the *SITF*, rallied support for the 'Connected Asia' vision through regional thought-leadership workshops, as well as through platforms such as the *Asian-Oceanian Computing Industry Organisation (ASOCIO)*. Examples of Connected Asia initiatives that have been proposed include the development of a database of regional opportunities such as tenders of IT projects, and development of a high-quality certification process for infocomm talent, to enhance cross-border talent flow.

An industry panel discussion at the launch of Connected Singapore

In November 2002, ministers at the *Asian-Oceanian Computing Industry Organisation (ASOCIO)* supported the 'Connected Asia' theme. The *ASOCIO* members agreed to jointly develop projects such as cross-border common accreditation of ICT skills and the promotion of common industry standards.

Realising the 'Connected Singapore' Vision

To stimulate the growth of the Singapore infocomm industry over the next three years, *IDA* unveiled its vision of a Connected Singapore. The vision aims to institute a more pervasive connectivity among the people and businesses through infocomm technology.

To realise the 'Connected Singapore' vision, *IDA* has embarked on four broad strategies:

- To leverage existing network readiness and capabilities for wireless pervasiveness, develop contents and promote infocomm literacy.
- To develop Singapore as a leading global digital distribution and trading centre.
- To grow new economic activities and create jobs in infocomm through developing capabilities, encouraging technology development and expanding access to overseas markets.
- To help businesses and government agencies use infocomm to re-engineer key business clusters and government services.

To support the four strategies, *IDA* will invest in capability development. This is done through training programmes, competency centres and iLIUP. *IDA* will continue to chart the technology landscape in Singapore, identify emerging technologies and formulate pro-business regulations and policies in the industry.

IDA will also work with the industry to encourage seeding and support for start-ups and help companies grow beyond Singapore. Through the Overseas Development Programme (ODP), *IDA* will nurture 50 globally competitive local companies to achieve export revenue of more than S$50 million (US$29m) through partnerships with MNCs over the next two years.

Former Acting Minister (MITA) David T.E.Lim giving an opening speech at the launch of Connected Singapore

SINGAPORE'S INFOCOMM ACCOLADES

Singapore has been internationally recognised with a number of awards pertaining to the infocomm industry:

- The third most IT-savvy nation in the world and top in Asia, according to the *Global Information Technology Report : Readiness for a Networked World*, compiled by the *World Economic Forum 2003*
- The second among innovative leaders in the delivery of Government services, based on *Accenture's Global Annual Study 2002*
- For the second consecutive year, Singapore is ranked among the top 7 intelligent communities in the world for 2002 according to the *World Teleport Association (WTA)*
- Top in Asia in e-commerce infrastructure, by the *World Competitiveness Yearbook 2002*
- Top in Asia in e-business readiness, by the *Economist Intelligence Unit 2002*
- Wins *United Nations* Public Service Award 2002 for forming the National Trust Council and conceptualising the Trustmark programme
- Ranked first in technology and e-commerce capabilities among 48 nations, according to the 2003 *Global Information Technology - Economy Index* by *Tech-Economy*

Postal Services in Singapore

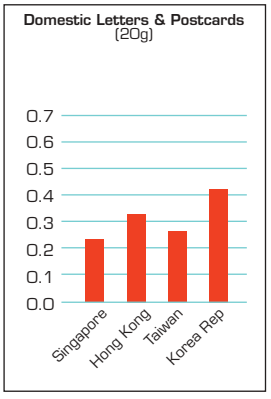
Postal services remain an essential mode of communication. The volume of ordinary domestic mails handled saw an increase of 2.6% from 678.9 million to 696.2 million while the volume of total ordinary mail handled grew 0.2%.

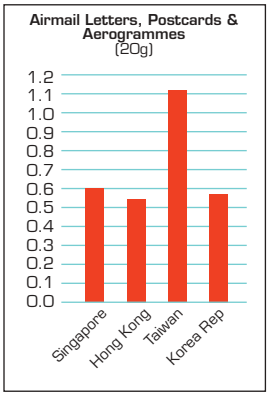
While *SingPost* is granted exclusive privileges in the handling of letters and postcards until 2007, the provision of express letters is liberalised. Currently, about 125 service providers provide such services with some providing delivery services for printed papers and parcels as well. The use of computer and technology has taken postal services to greater heights. The development of virtual post office, vPOST which is an electronic bill presentment and payment services from *SingPost*, enables customers to perform various postal and payment transactions online.

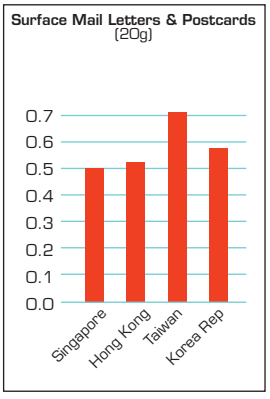
The number of self-service automated machines (SAMs) has increased to more than 120 SAMs as at 31 May 2003. SAMs allow multiple transactions with one-stop convenience. Their service has also been enhanced with the installation of barcode scanners and sound speakers to enable customers to scan details of bills.

POSTAL SERVICES IN SINGAPORE

	Ordinary Mail				
	Posted			Total Received (Incoming)	Total Handled
	Domestic	Outgoing	Total		
Apr - Jun 2002	170,129	22,247	192,376	10,494	202,870
Jul - Sep 2002	173,622	20,231	193,853	10,372	204,225
Oct - Dec 2002	181,227	22,515	203,742	11,552	215,294
Jan - Mar 2003	171,214	19,650	190,862	10,657	201,521
Financial Year 2002/2003	696,192	84,643	780,833	43,075	823,910







As an advocator for change, *IDA* works closely with non-infocomm industries to help them gain competitive advantage through the adoption of infocomm for e-business transformation.

In 2002, *IDA* focused on building a robust e-business infrastructure with global linkages and improving the infocomm capabilities of local businesses. It sought to create sophisticated demand conditions through developing business savviness in the use of infocomm technologies, and also to develop a trusted and secure environment for e-commerce.

Electronic commerce continued to gather momentum in Singapore in 2002 as companies adapted their business models and core competencies to meet market demands. Quarterly surveys showed that business-to-business (B2B) transactions for 2002 were valued at S$106.5 billion (US$62b). Three sectors led in generating B2B transaction value - financial intermediaries, wholesale and retail, and transport, storage and communication. Together, they accounted for about 88% of total B2B transaction value.

Spurring E-Business Innovation and Adoption

IDA supported and initiated more than 40 e-business projects. The adoption of these innovative projects is projected to generate more than S$23 billion (US$13b) worth of transactions.

To strengthen Singapore's position as a leading manufacturing hub with e-sourcing and e-procurement capabilities, *IDA* strongly supported open standards to better align processes among supply-chain partners on a global basis. Singapore launched the RosettaNet Chapter to promote awareness of the new standards to the multinational companies and small and medium-sized enterprises in Singapore, second after Japan.

- The RosettaNet Consultancy and Service Centre was jointly established by *Singapore Computer Systems* and *Microsoft* in October 2002. The Centre provides consultation to local enterprises, especially small and medium-sized enterprises (SMEs) to leverage IT and RosettaNet standards to improve their business processes.

- In January 2003, the RosettaNet e-learning courseware was launched. This affordable first-of-its-kind online courseware provides companies with capability training. The number of corporate e-learning users totalled 400 as at May 2003.

- *Seagate Technology*, with support from 12 of its Singapore-based suppliers and backed by *IDA*, conducted a pilot project to implement GridTalk, a solution by *Gridnode*. The software allows vendors, distributors and manufacturing partners to use RosettaNet's web-based Partner Interface Processes to standardise and exchange information over a distributed architecture.

Providing Support to the Industry

IDA supported the development of the Global NEC Partner Site (GNPS) Centre of Competency in Singapore. The GNPS enables automatic global e-procurement for NEC's international procurement offices, connecting them to a worldwide network of suppliers.

The development of Ri3K re-insurance exchange in Singapore for the Asian insurance market was another project supported by *IDA*. This is an end-to-end Straight-Through Processing (STP) platform that allows end-users to integrate their systems with a central exchange. For re-insurance players, this exchange would bring about US$4 billion (S$6.8b) in savings from leakage costs and increase operational productivity.

BondsInAsia (Singapore) initiated a browser-based G3 bond trading system for the corporate and government bond market in Asia. This trading system operates across multiple countries where local market conventions and regulatory issues often preclude the rollout of an advanced global system. *BondsInAsia (Singapore)* expects to capture approximately 14% of the total market share for G3BondsInAsia, bringing about a projected incremental e-commerce transaction value of S$21.6 billion (US $12.4b) in their first year of trading.

On 16 September 2002, the *Singapore Exchange* announced its plan to offer the world's first DRAM futures trading in 2003, with the support of *IDA*. This financial product will present unique opportunities for trading and arbitraging by players in the financial and futures industries, and allow them to better manage trading risks.

Representative officials at a Memorandum of Intent signing ceremony for the e-Supply Chain Management Assessment Programme

Adopting Best Practices for E-businesses

The National E-Supply Chain Task Force was established in 2002 to raise the level of e-supply chain readiness among manufacturers and logistics providers in Singapore. This task force developed the world's first e-Supply Chain Readiness Certification programme. Subsequently in October 2002, the e-Supply Chain Management (eSCM) Council was launched.

IDA, through the eSCM Council, launched the eSCM Assessment Programme to encourage its take-up among local e-businesses. The first in the world, the programme assesses the eSCM capabilities of local companies, and provides an independent and transparent verification of their capabilities and collaborative processes.

To foster a secure e-commerce environment based on interoperable Public Key Infrastructure (PKI) products and services, it is necessary to have mutual recognition of digital certificates provided by different vendors. It is essential to have a common platform for organisations to develop and test new PKI technology and applications.

To address these concerns, the *PKI Forum Singapore* and *CrimsonLogic*, with *IDA's* support, set up the Singapore PKI Technology Centre (SPTC) in October 2002. The SPTC is equipped with a basic PKI infrastructure to facilitate interoperability requirement testing, and serves as a test-bed for new PKI-related technologies and applications. Industry partners included *Sun Microsystems*, *SingTel* and *Cisco Systems*.

Collaborating Across Borders

The Asia Trustmark Alliance MOU, signed on 23 January 2003, marked the collaboration among trustmark providers from Singapore, Japan, Korea and Taiwan for cross-recognition and cross-border alternative dispute resolution (ADR). Singapore's representative in this alliance is *CommerceTrust Ltd*, a B2C Authorised Code Owner under the TrustSg programme.

Under the MOU, the four countries will mutually recognise one another's national trustmark programmes and co-operate in handling cross-border consumer complaints, and enhancing consumer trust and safety in online transactions.

THE SPIRIT OF INNOVATION

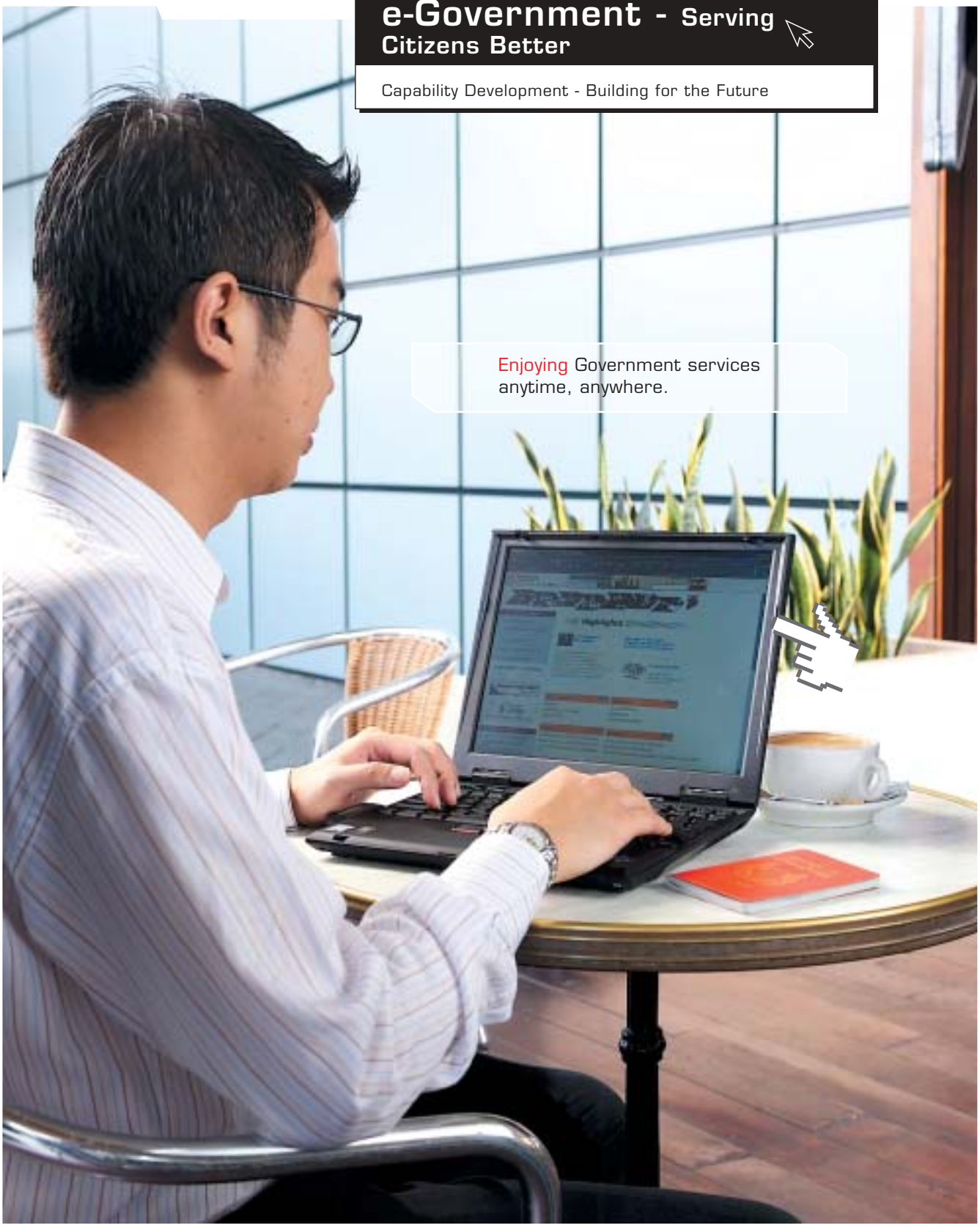
Three local technology companies were recognised for their groundbreaking products and services, and another two organisations for their innovative use of infocomm technology, at the inaugural National Infocomm Awards in 2002. The winners were selected from a total of 347 nominations by an international panel of judges.

One of the three awards for Most Innovative Infocomm Product or Service went to *FairEx International Financial Systems'* E-Trading System for proprietary trading and risk management. The highly robust and innovative system allowed banks, brokers and consumers to deal in foreign exchange.

The other two awards went to *InfoTalk Technology* for its InfoTalk-Recogniser – a multilingual speech-recognition software engine that can recognise accents and conversational speech in mixed languages – and *Muvee Technologies* for its muvee autoProducer software – the world's first fully automatic video-editing software that radically speeds up the video-editing process.

Fuji Photo Film (Singapore) won an award for the Most Innovative Use of Infocomm Technology for its Print@FujiColor services, while the *Supreme Court* won for its E-Litigation System, which is possibly the world's first comprehensive and integrated online legal system.

The National Infocomm Awards trophy



The vision of a 'Connected Singapore' includes the very interaction between the government and its people. Guided by this vision, S$1.5 billion (US$842.7m) was spent on an e-Government Action Plan, which was managed by *IDA's* Government Chief Information Office (GCIO). The GCIO initiated several programmes that aimed to define ICT directions, policies and standards, identify innovative technologies and secure the infocomm environment in Singapore. In its drive to become a leading e-Government, ICT governance structures and processes were introduced, including the development of the eCitizen portal that sought to provide everyone with the means to transact with the Government online. The international accolades received for e-governance bear testament to Singapore's success in achieving the "Connected Singapore" vision.

Providing a Definitive Guide to E-Governance

To achieve its vision of being a leading e-Government, effective ICT governance structures and processes had to be introduced to ensure synergy and alignment. These are realised through the following:

- The Instruction Manual for ICT (IM8) – introduced to enhance the overall effectiveness of ICT in the public sector, as well as establish minimum standards leading to a networked government.
- The Service-Wide Technical Architecture (SWTA) – a public sector-wide technical architecture, established to guide government agencies in the design, acquisition, implementation and management of ICT systems. This enables interoperability and information exchange between various agencies' ICT systems.

CONNECTING GLOBALLY WITH ACCOLADES

For its efforts, the Singapore Government received several internationally renowned accolades for e-governance.

Global e-Government Leadership

Singapore's e-Government initiative received worldwide acclaim, having ranked second in *Accenture's* study of e-Government four years in a row, from 2000 to 2003. The latest ranking placed Singapore amongst the leading countries with established customer service objectives, and with portals offering valuable, convenient online services.

Global IT Report Ranking

For the second year running, Singapore topped the e-Government segment of *World Economic Forum's (WEF) Global IT Report*. In last year's report assessed by *Harvard University*, Singapore was reported as one of the few countries where e-Government services not only have provided more efficient access to the Government, but also contributed significantly to realigning the way the Government operates. This year's report assessed by *INSEAD*, credits the Government with using ICT aggressively in internal government processes, availing of government services online, and encouraging ICT deployment and use through policy measures and laws.

Excellence and Innovation in e-Government

Throughout 2002, enhancements were made to the Public Service Infrastructure (PSi), a shared platform for the development and deployment of government e-services. In June 2002, *IDA* received the prestigious Explorer Award at E-GOV 2002, a globally recognised e-Government event. The Award honours organisations that have developed innovative e-Government programmes that increase productivity, conserve limited public resources and improve the quality, timeliness and accuracy of public services.

Building a Portal for e-Government

Re-launched in October 2001, the eCitizen portal (www.eCitizen.gov.sg) is designed to be the first stop to a wide range of public e-services, such as the electronic filing of income taxes, renewal of vehicle licences and application for a business licence.

Through the eCitizen portal, the government aims to move its customers online rather than wait in line. To date, the Government offers more than 1,600 services online which is more than 90% of all feasible counter services. The portal has seen its hit rate increase from a monthly average of 240,000 to 8.7 million. Going forward, a key focus of the public sector will be to integrate public services across agencies, demonstrating the concept of "Many Agencies, One Government".

In October 2002, Singapore's eCitizen portal won the Stockholm Challenge Award, which recognised excellence in harnessing the latest infocomm technology to benefit society.

PUBLIC SECTOR E-SERVICES

The public sector made significant progress in integrating its services online. Some e-services recently introduced include:

- The Online Donation Portal
- The Civil Service One-Stop Job Portal
- The new Arts and Heritage Town Portal
- My.eCitizen, enabling a personalised eCitizen homepage with unique e-services and alerts.
- SingPass, a common id/password for the public to transact with the government online
- The GeBIZ system, an integrated one-stop centre for over 6,000 trading partners to interact with the government online

Providing Easy Access to eCitizen Services

The eCitizen Helper People – Private – Public (or 3P) Partnership programme was launched in March 2003, to provide everyone with the means to transact with the Government online, even if they do not own a computer or know how to use the Internet. This is part of the Government's commitment to ensure that no user is deprived of the convenience and benefits of e-Government and e-services.

The eCitizen Helper 3P Partnership is a joint collaboration between the Government and other public and private sector organisations. The programme partners deploy eCitizen Helpers to guide users in accessing Government e-services. To date, 22 eClubs from the People's Association, 19 FujiFilm FDI (Fuji Digital Imaging) shops, NTUC Fairprice's Office 1 and 378 Community Net agents from NTUC Income have joined this initiative.

Creating the Ideal Infocomm Environment

IDA's Government Chief Information Office (GCIO) acts as the primary technical advisor and technical programme manager for the e-Government Action Plan. The GCIO is responsible for accelerating and project-managing innovative and impactful Government-wide information and communications technology (ICT) initiatives.

With the objectives of defining ICT directions, policies and standards, identifying technology-enabled innovations for experimentation in the Government, and fostering a secure infocomm environment in Singapore, the GCIO undertook several initiatives to realise these goals.

The Technology Experimentation programme was launched in July 2002 with the aim of encouraging and facilitating technology experimentation within the public sector. In 2002, the GCIO promoted and co-funded technology experimentation in the public sector, and has started five trials in three technologies, particularly in the areas of Free Space Optics, Next Generation Wireless LAN and Radio Frequency Identification.

In October 2002, the GCIO hosted 66 delegates from over 20 countries at the 36th Annual Conference of the International Council for Information Technology in Government Administration (ICA). With a theme centred on "Innovating and Transforming Government through Information Technology", the conference focused on the innovative use of partnerships, funding models and management approaches leading to transformed governments.

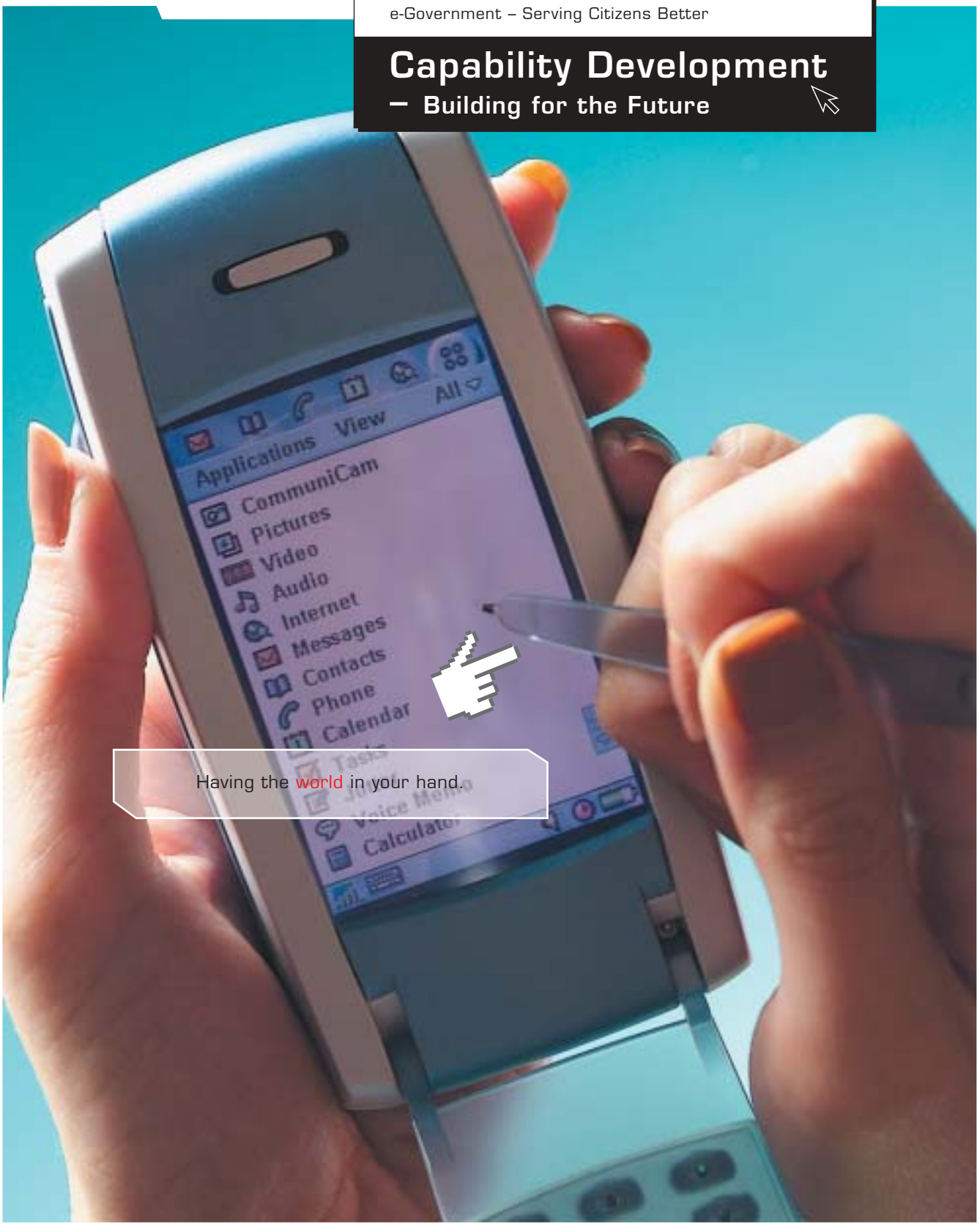
The GCIO organised several events to facilitate communications and knowledge sharing amongst public sector agencies in 2002. These include:

- The Public Service ICT Seminars, which served to communicate technology trends and service-wide ICT initiatives to the public sector.
- The Public Service ICT Forum, that sought feedback and suggestions on policy matters relating to ICT deployment in the government.
- The 13th Managing for Excellence Forum on e-Government, which shared experiences from around the world on e-Governance.
- Hosting 29 visits by foreign governments and agencies from various parts of the world. Visitors were mainly officials with interests in Singapore's e-Government efforts.

Finally, the GCIO also provided professional Ministry Chief Information Office services to 26 Government agencies. The challenge is to ensure consistent practices and delivery of quality services. To date, all GCIO HQ divisions and 18 managed sites have been ISO9001 certified. 96.91% of GCIO direct customers also rated GCIO services 4 and above out of 6 in the Customer Satisfaction Survey conducted in 2002.

IDA CEO Tan Ching Yee (first from left) having a chat with Senior Minister of State Khaw Boon Wan (first from right) and other foreign delegates at the 36th Annual Conference of the International Council for Information Technology in Government Administration

Capability Development – Building for the Future



Getting every Singaporean connected locally and globally is imperative if we are to build an e-inclusive society. *IDA* has invested heavily in the capability development of the people, particularly in nurturing and developing infocomm specialists and an infocomm-savvy workforce.

Guests at the launch of e-Celebrations 2002

Getting Everyone Connected

IDA seeks to empower every citizen with the knowledge and ability to use infocomm services and applications, and ensure that everyone has the opportunity to acquire infocomm literacy skills for work, learning and play. Numerous programmes were initiated to connect the people with infocomm technology.

Former Acting Minister (MITA) David T.E.Lim (third from left) with representatives from the top five authorised training centres at the launch of Infocomm Literacy Month

The annual e-Celebrations Singapore campaign aims to promote an e-lifestyle by increasing literacy, improving access to infocomm technology, and building consumer confidence in online transactions.

IT literacy training at the Great Singapore Surf

The National IT Literacy Programme (NITLP) was introduced to equip Singaporeans with basic infocomm literacy and Internet skills. In August 2002, the Great Singapore Surf was launched to promote IT literacy training as "useful, easy and fun". The NITLP has trained over 126,000 trainees since June 2001.

Volunteers refurbishing used PCs

Students exploring the benefits of broadband

The PC Reuse Scheme was another major programme aimed at improving access to IT. Through the scheme, donated PCs, refurbished by volunteers and bundled with basic infocomm training, software, Internet service and technical support, were distributed to low-income families. This programme was instrumental in increasing the PC penetration rate in Singapore from 63.9% in 2001 to 68.4% in 2002 (according to the Annual Survey on Infocomm Usage in Households and by Individuals for 2002).

The Broadband Month, held in April 2002, encouraged the public to embrace infocomm technology for work, study and leisure. Diverse broadband-related activities, online movie trailers and games, e-learning and promotional broadband packages were offered.

TrustSg, a nation-wide trust mark, is another effort to build trust and adoption of an e-lifestyle amongst consumers. The programme was awarded the prestigious United Nations Public Service Award on 23 June 2003 for "Improvement of Public Service Results" in Asia and the Pacific.

Singapore President S.R. Nathan (centre) and former Minister (Manpower) Lee Boon Yang trying out an infocomm tool at the Singapore Learning Festival 2002

Thematic online fairs are an avenue to boost consumer confidence to transact online, as well as to motivate online adoption across the population. *IDA* spearheaded a series of thematic online fairs, which included e-Festival@Great Singapore Sale, e-Festival@Homemakers, Chinese Internet Week, IT Family Fair at the Great Singapore Surf, and Festive Season Shopping Bonanza 2002.

The e-Ambassador and the Hall of IT programmes supported and nurtured online communities. The e-Ambassador programme is a peer-led approach to coach friends and family members to embrace ICT. The Hall of IT includes exhibits and workshops that showcase the benefits and impact of infocomm technology at home, work and play.

National Infocomm Connectivity

Computer ownership among Singapore households reached 68.4% in 2002, in part due to the computer being perceived as a necessity for most Singapore households and also to the increasingly competitive prices of PCs in the market. 47% of Singapore's population aged between 15 and 69 are infocomm literate, ie. they know how to use and are competent in at least one form of online transaction.

66% of Singapore's population aged between 15 and 69 use computers regularly, while 59% use the Internet. A large part of this infocomm-literate group – 38% of the population - is also infocomm competent, ie. they know how to use at least four general office applications.

The Internet penetration rate in Singapore was 59.4% in 2002, an equivalent to 636,000 households. Broadband users form about 24.2% of the population, up from 17.7% in 2001. Working adults generally use broadband for online shopping, online banking, download/update software applications, online music and online government-related transactions.

By April 2003, mobile phone usage in Singapore shot up to 79.2%, one of the highest mobile penetration rates in the world. Apart from SMS, the next two most popular built-in functions were Games and Personal Information Management such as calendaring and scheduling appointments.

With 99% of homes, schools and businesses broadband enabled, and with more than 240 hotspots island-wide, Singapore is one of the most infocomm-savvy and connected countries in the world.

Developing an Infocomm-Savvy Workforce and a Pool of Relevant Infocomm Specialists

With infocomm technology and the Internet transforming businesses in all industry sectors, it is crucial that the workforce be equipped with relevant infocomm skills to maintain Singapore's global competitiveness. *IDA* has invested in bridging the demand-supply gap for infocomm manpower by building capabilities in critical and emerging areas of growth through manpower training programmes and competency centres.

Enhancing Infocomm Training

From basic computer literacy programmes for the masses, to workforce training and infocomm manpower capability development, the Infocomm Training Framework focuses on varying levels of competency to enhance quality of life and employability. It comprises five levels of infocomm training programmes, to meet Singaporeans' specific needs in infocomm skills:

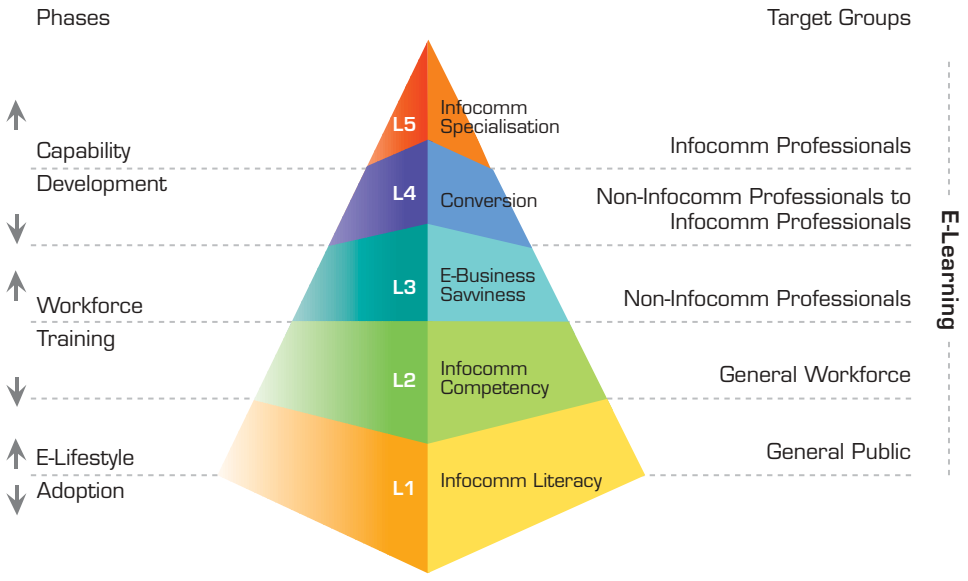
Level 1 - Infocomm Literacy: This level focuses on the essential infocomm skills in leading an e-lifestyle, such as basic computing and Internet skills.

- The National IT Literacy Programme (NITLP) is a basic programme promoting infocomm literacy. 47,707 workers, homemakers and senior citizens participated in the programme from 1 April 2002 to 31 March 2003.

Level 2 - Infocomm Competency: This level focuses on the general working population which aims to enhance workforce competitiveness and employability.

- The Infocomm Competency Programme (ICP) provides training in the areas of Office Automation, Workgroup Applications, and Internet Web-page Design. Over 96,000 workers were trained since June 2001, with 39,965 graduating from ICP from 1 April 2002 to 31 March 2003.

INFOCOMM TRAINING FRAMEWORK



Level 3 - E-Business Savviness: This level focuses on equipping non-infocomm professionals with e-business knowledge such as e-business management, development and vertical applications.

- The E-business Savviness Programme (EBSP) develops skilled manpower with e-business skills and knowledge to champion e-business transformations within companies. About 447 workers were trained in the 12 months beginning 1 April 2002.

Level 4 - Conversion: This level aims to increase the pool of infocomm manpower by allowing non-infocomm professionals to embark on new careers in strategic infocomm-related sectors.

- The Strategic Manpower Conversion Programme in Infocomm (SMCP [Infocomm]) provides training such as programming, systems analysis, consultancy and networking. 427 workers were trained from 1 April 2002 to 31 March 2003.

Level 5 - Infocomm Specialisation: This level focuses on capability development of the infocomm manpower through continuous skills upgrading.

- The Infocomm Training and Attachment (iTA) programme connects infocomm professionals with local and overseas training opportunities in critical and emerging technologies through partnering organisations. About 300 infocomm professionals from 20 companies have participated in the programme. The Java Black Belt programme was launched in January 2003 to train aspiring IT architects in the latest Java technology in High Performance Computing, Storage and Wireless.
- The Critical Infocomm Technology Resource Programme (CITREP) is a specialised training programme that enables infocomm professionals to upgrade their skills in emerging and critical infocomm areas such as Networking, Wireless Technology and Web Services. 5,256 infocomm professionals participated in the programme during the period of 1 April 2002 to 31 March 2003.

Competency Centres

Situated at research centres and institutes of higher learning, competency centres (CCs) create new intellectual property and accelerate technology development. CCs serve as platforms for local infocomm enterprises and global technology providers to invest in trainers and developers, and develop new training programmes and curricula. *IDA*, together with the *National University of Singapore* and *Fudan University*, established a CC within Fudan's university campus in March 2003 to build and develop capabilities in Peer-to-Peer Computing. The other CCs are ASP Centre, E-Learning Centre, Internet Protocol Convergence Lab, Java Smart Services Lab, Java Wireless Competency Centre, Wireless Intellect Labs, Siemens Location Enabling Centre and National Infocomm Competency Centre.

e-Learning Early Adopters Programme

In July 2002, *IDA* introduced the E-Learning Early Adopters Programme (eLEAP), to jumpstart e-learning adoption in Singapore companies by equipping employees with the right knowledge and skills through continual and effective employee training. As at March 2003, about 6,700 individuals and 18 organisations' e-learning adoption have spun S$4 million (US$2.3m) worth of ICT spending in IT training, e-learning consultation and implementation.

The e-Learning Competency Centre was launched in November 2002 to define and promote e-learning standards and best practices. Initiatives include Gateway to Learning Objects in Singapore, Singapore's e-Learning House, PlugFest 2003 and Quality Guidelines for e-Learning.

A seminar to promote e-learning adoption and best practices

INDUSTRY INFOCOMM SKILLS

Infocomm Manpower
In 2002, there were 103,880 infocomm personnel, of which 51,790 were from infocomm industry organisations and 52,090 from end-user organisations. Both the number and level of competency have improved compared to 2001.

***IDA's* Infocomm Literacy Survey 2002**
- 60% of Singapore resident population (15 - 69 years old) is infocomm literate*
- 60% of the working population (15 - 69 years old) is infocomm competent**
- 22% of the working population(15 - 69 years old) is e-Business savvy***

Top 3 industries by Infocomm competency
- Hardware
- IT services
- Software

Top 3 occupations by Infocomm competency
- Applications Development & Integration
- Technical Support
- Infocomm Sales & Marketing

Top five infocomm jobs in the infocomm industry
1. Applications Development and Integration
2. Infocomm Sales and Marketing
3. Infocomm Top Management
4. Software Development and Integration
5. Technical Support

Top five most essential technical skills for core businesses
1. IT Project Management
2. Operating Systems (Windows)
3. Multimedia
4. Database Administration (SQL)
5. Networking (TCP/IP)

* Infocomm literate - know basic computing and Internet skills and are competent in at least one online transaction

** Infocomm competent - know how to use at least four general office applications

*** e-Business savvy - know e-business such as e-business management, development and vertical applications

@IDA

Infocomm Investments Pte Ltd

Singapore Network Information Centre Pte Ltd

People are the most valuable resources at *IDA*. On a mission to "Empower, Enable & Enliven", *IDA* has attracted and retained people with talent and passion through world-class human resource management programmes. *IDA* seeks to achieve organisational excellence by cultivating creative organisational development programmes that elicits fresh and innovative ideas. In developing closer bonds among its people, *IDA* has fostered a supportive environment of fun and relaxation.

IDA staff are people who are not merely talented, hardworking and intelligent, but also possess a passion for developing Singapore's infocomm infrastructure and industry. *IDA* attracts local and international talent to strengthen and complement its existing skilled pool.

Developing *IDA's* Manpower Resources

To meet corporate objectives, *IDA* has formulated a basis for rewarding performance and developing its human assets. Through a competency-based performance management system, Achieving Continuous Excellence (ACE), the individual and his/her supervisor jointly manage his/her performance goals and achievements via a consultative coaching and feedback method.

One of the ACE training sessions conducted by the Mercer Human Resource consultants

Founded on the principles of objectivity, transparency, balance and value creation, the ACE system covers a wide range of HR development strategies that range from goal-setting to career development planning. *IDA* provides excellent learning opportunities for staff, particularly through the Continuing Education Programme (CEP). CEP aims to enhance *IDA's* growth potential by nurturing the individual staff through job-related courses and further education. While equipping staff with skills that enhance their career mobility, CEP also seeks to align the individual's goals with that of *IDA*.

Education subsidies are also made available to *IDA* staff who wish to pursue further studies, at accredited local educational institutes, leading to a recognised professional qualification.

Staff discussing issues at a Kopi Tiam session

Fostering a Conducive Environment

IDA focuses on developing a common identity and fostering close staff bonds. Events like the bi-annual Staff Conference, Café Latte (Learning And Thinking Together Enthusiastically), and Kopi Tiam sessions were held for staff to discuss and share ideas on organisational issues.

IDA CEO Tan Ching Yee giving an inspirational talk at the Staff Conference

At the Staff Conference held in October 2002, staff had the opportunity to pose questions and seek clarifications from the senior management. The result was an ample exchange of information to clarify directions and objectives. Regular staff conferences enable staff to stay informed on the direction of the organisation and developments in the external environment. They also allow *IDA's* professionals to share their personal experiences, hopes and ideas in a very conducive environment.

IDA and other *MITA* agencies jointly organised the Innovation Fiesta, a fortnight-long series of activities in August to spark staff creativity. Visits were made to *IDA's* Proof of Concept Lab as well as to other innovation sites in the *MITA* family.

IDA's very own "Wheel of Fortune" at the "Think & Do" Staff Conference

With these efforts, *IDA* puts itself on the right path towards achieving organisational excellence, implementing changes whenever necessary and developing itself into a leading organisation of the future.

Interacting Outside the Box

In 2002, *IDA* participated in eight Inter-Statutory Board Games (ISBG). For the staff at *IDA*, the word 'passion' is not reserved for work alone, as they are also active in the sports arena as well. *IDA* staff took part in netball, bowling, badminton; and soccer competitions.

The netball team that came in 2nd place in the Inter-Statutory Board Games

With such active all-rounders at *IDA*, it is not surprising that Family Day activities, movie nights, health talks, yoga classes, and special ad hoc events appear regularly on its event calendar. Bowling tournaments and soccer games help staff members unwind, as do regular "happy hour" sessions offering food, drink and plenty of laughter. *IDA's* on-site gym provides another avenue for stress reduction and good health, which is clearly a priority for the organisation.

Organised by the enterprising recreation club, Fun@IDA, these events foster close-knittedness and team spirit that makes working at *IDA* fun and meaningful.

It is this spirit, the sense of camaraderie, and a challenging but supportive environment that *IDA* continually strives to preserve. *IDA* believes that its ability to support the industry and respond to national needs is reflected in its approach to each individual who represents *IDA*.


Family Day 2002

IDA and its Subsidiaries ▸

Infocomm Investments Pte Ltd

Singapore Network Information Centre Pte Ltd





A >
Chairman, IIPL
Low Check Kian

B >
Director
Teo Swee Lian
Asst Managing Director
Monetary Authority of Singapore

C >
Director
Yong Ying-I
Permanent Secretary
Ministry of Manpower

A | B | C | D | E

D >
Director
Madeleine Lee
CEO / CIO
Athenaeum Fund Management Pte Ltd

E >
Director
Tan Ching Yee
Chief Executive Officer
Infocomm Development Authority of Singapore

F >
Director
Ong Peng Tsin
President & CEO
Encentuate Pte Ltd

(Not in picture)

A NOTE FROM IIPL'S CHAIRMAN

INVESTING FOR THE FUTURE

The overall business environment continues to be hampered by the uncertain economic outlook amidst the conflict in the Middle East and the recent SARS outbreak, thereby reinforcing our cautious investment approach.

Against this backdrop, *Infocomm Investments Pte Ltd (IIPL)* was affected, like other investors, by the challenging investment climate; and had to exercise financial prudence and make substantial provisions of S$24.5 million (US$14m) to take into account the prolonged difficult operating environment facing some of our investees and/or to recognise diminution in market value of other investments. In addition, *IIPL* also has to fulfill a strategic and developmental role in the infocomm industry in Singapore. Notwithstanding the above, *IIPL* managed to perform credibly in the Financial Year ended 31 March 2003 against comparable market indices and similar investment funds. *IIPL* has also not taken into consideration any potential financial upside from other investments that are performing satisfactorily. Financially, *IIPL* continues to be in a sound position.

Earlier this year, *IIPL* made new investments in *Onewave Technologies*, a China-based provider of software products for broadband and cable operators. The objective was to facilitate potential partnerships for Singapore companies that wish to gain access into the broadband access and services markets in China.

Among *IIPL's* existing investments, *IPACS China* (a provider of system integration services to the aviation, banking and finance, and energy sectors in China), continued to perform strongly with improved profits in 2002 despite these challenging times. In October 2002, NCS bought 51% of *IPACS China* from IPACS for the latter to record an extraordinary gain.

Trados acquired *Uniscape*, another *IIPL* investee based in California and a provider of content-management software and services that translates and localises website content, in May 2002. As a provider of translation technology, *Trados* absorbed *Uniscape* into its organisation, re-positioning it as *Trados*' enterprise solutions unit. The combined entity realised its first profitable quarter in the quarter ended 31 December 2002, and attracted an unsolicited investment from *Invision AG*, a leading Swiss VC firm, in September 2002.

Moving forward, the board and management of *IIPL* will continue to put more emphasis to assist our portfolio companies in ensuring their sustainability. This will be achieved through raising new funds and/or suitable consolidation of complementary businesses, and reduction of operating expenses.

I would like to take this opportunity to welcome our new director, Mr Ong Peng Tsin to the Board on 1 January 2003 and also, to thank my fellow directors for their contribution during the year.

Low Check Kian *Chairman, IIPL*

Infocomm Investments Pte Ltd

Singapore Network Information Centre Pte Ltd

Singapore Network Information Centre

Singapore Network Information Centre (SGNIC) Pte Ltd is a fully-owned subsidiary of the *IDA*. Set up in October 1995, its serves to administer the Internet domain name space in Singapore and provide a forum for the local Internet service providers and regulatory bodies. *SGNIC* provides registry service for the '.sg' domain, registers third level Internet domain name for com/org/net/gov/edu/per.sg via its accredited registrars, and formulates domain name registration policies.

The ".sg" domain space is the top-level country-code for Singapore. The world's domain spaces are assigned by the *Internet Corporation for Assigned Names and Numbers (ICANN)*. *ICANN* is a non-profit, private-sector corporation formed by a broad coalition of the Internet's business, technical, academic, and user communities.

***SGNIC*: From Academia to Accreditation**

In early 1990s, responsibility for the '.sg' domain space was delegated to a Technet Unit from the *National University of Singapore*, for academic and research purposes by a US-based international body known as *Internet Assigned Numbers Authority (IANA)*. *IANA* later became a unit of *ICANN* in 1998 when the latter was formed.

SGNIC was formed with the advent of Internet commercialisation. Since then, it has been responsible for the registration and maintenance of third-level Internet domain names. *SGNIC* became a wholly-owned subsidiary of the *National Computer Board* in July 1997 and of *IDA* in December 1999.

SGNIC'S ACHIEVEMENTS IN FY2002

i. Singapore Domain Name Dispute Resolution Policy

The Singapore Domain Name Dispute Resolution Policy (SDRP) is an alternative dispute resolution process for resolving domain name disputes involving .sg registrants. It was developed under a MOU signed with the Singapore Mediation Centre (SMC), the Singapore International Arbitration Centre (SIAC) and the Singapore Institute of Arbitrators (SIArb). The dispute resolution service is jointly provided by SMC and SIAC. Since its implementation in January 2002, four domain name disputes had been resolved under the SDRP.

ii. Registry-Registrar (SgR2R) System

The Registry-Registrar (SgR2R) System was implemented in January 2003 to allow multiple accredited registrars to register third-level domain names. With this system, accredited registrars can provide a host of services such as Internet connection and web-hosting on top of domain name registration services.

Currently, there are six accredited registrars – *Adicio Pte Ltd*, *Cybersite Pte Ltd*, *IP Mirror Pte Ltd*, *Pacific Internet Ltd*, *SingNet Pte Ltd* and *Webvisions Pte Ltd*. *SGNIC* accepts applications from companies for accreditation on an on-going basis.

OK

Board of Directors
Leong Keng Thai, Chairman
Andy Haire, Director
Dr. Tan Geok Leng, Director

Management Team
Lim Choon Sai, General Manager
Lim Yuk Min, Operations Manager