Imagine Your World...



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Annual Report 2005/06

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Intelligent Nation, Global City



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Twenty-five years ago, Singapore implemented the first nation-wide computerisation plan. Back in 1981, the goal was clear – to harness infocomm technology for Singapore's social-economic development.

Twenty-five years on, as Singapore celebrates the silver anniversary of Infocomm developments in Singapore, we marvel at how enduring our vision has been.

We remained steadfast to this goal even as we launched iN2015, our latest infocomm masterplan. However, the landscape and challenges we now face have taken an entirely different shape and form.



iN2015 < Imagine Your World

Intelligent Nation 2015 (iN2015) is a masterplan that harnesses the potential of infocomm in the coming decade to transform every aspect of daily life and business. It is the culmination of a collaborative effort, reflecting the ideas and vision of the people, public and private sectors.

iN2015 is Singapore's sixth infocomm masterplan since 1981 and was launched in June 2006 by Dr Lee Boon Yang, Minister of Information, Communications and the Arts. The development of Singapore's ten-year masterplan kicked off in May 2005 when a high-level steering committee chaired by Chairman of IDA was formed. In tandem with gathering inputs from the industry, IDA launched **Express IT! iN2015** to gather views and ideas from the public. Over 3,000 entries were received from the enthusiastic public.



iN2015 aims to transform Singapore into an intelligent nation and a global city by the year 2015 and it hopes to achieve these targets:

- be Number 1 in the world in harnessing infocomm to add value to the economy and society
- achieve a 2-fold increase in value-add of infocomm industry to \$26 billion
- achieve a 3-fold increase in infocomm export revenue to \$60 billion
- add 80,000 jobs, both infocomm and non-infocomm
- achieve 90% of home broadband usage
- achieve 100% computer ownership in homes with school-going children

Chairman's Message



The infocomm sector has done well in 2005. The revenue of the industry grew by a remarkable 8.9% to reach \$37.89 billion. Globally, the technology sector is growing as key business sectors such as manufacturing and healthcare continue to invest in infocomm. Besides high growth markets like China and India, infocomm is also flourishing in emerging markets of the Middle East and Eastern Europe. All these augur well for the infocomm industry here.

IDA continues to focus its efforts on strengthening Singapore's status as a trusted infocomm hub, spur greater market diversification and deepen industry capability.

CONNECTED SINGAPORE

In early 2003, IDA developed the Connected Singapore blueprint to develop new sources of growth for Singapore. Much of what was set out in the four strategies of Connected Singapore has been achieved.

In tandem with our efforts to establish Singapore as a leading global centre for the distribution and trading of digital goods, the value of Digital Exchange revenues transacted through Singapore has increased. We also scored a world first, in the successful management and digital transmission of a fulllength Hollywood movie via the **Cross-Continent Digital Content** Transmission (CCTx) initiative last year. This placed Singapore on the world map as a global digital exchange and trusted infocomm hub.

IDA has also been working closely with the industry to seek out opportunities in non-traditional markets and have facilitated local infocomm enterprises to seal multimillion dollar deals in markets such as Bahrain, Kuwait and Turkey. This has in turn raised the profile and branding of Singapore infocomm enterprises, paving the way for greater access to these markets.

We have been in collaboration with the industry to implement flagship projects to transform businesses in key economic sectors such as healthcare, logistics and banking. For example, the implementation of the TradeXchange project will enable seamless flow of information between the industry and government agencies, anchoring global logistics activities in Singapore and help the sector save an estimated \$75 million over ten years.

IDA also embarked on a public sector-wide infocomm standardisation exercise last year with the \$1.5 billion Government's Standard ICT Operating Environment (SOE) Programme. The programme aims to enhance operational efficiency in the Government and is expected to result in substantial savings when fully deployed.

BUILDING ON SUCCESS

We have laid a good foundation over the last 25 years. When Singapore first embarked on national computerisation back in 1981. we had only 850 IT professionals supporting the country. Today, we have over 111.000 infocomm professionals and a vibrant infocomm sector that continues to grow strongly. Singaporeans have also grown to be highly infocomm-savvv, as evident in the mobile and broadband penetration statistics. Co-ordinated efforts arising from a series of infocomm masterplans have resulted in world-class infocomm infrastructure with good international connectivity.

Singapore is today recognised internationally to be at the forefront when it comes to harnessing technology for socio-economic developments and is consistently ranked among the top in international rankings. Nonetheless, we have to continually transform ourselves and find new ways of harnessing infocomm, to stay on top of the game.

THE VISION OF iN2015

To meet new challenges and create new possibilities, IDA together with the industry embarked on an ambitious effort to develop a new ten-year infocomm masterplan. The Intelligent Nation (iN2015) masterplan is Singapore's strategic response to the rapid global changes and seeks to differentiate Singapore from the pack.

iN2015 is a plan for every individual and business in Singapore and was in fact a collaborative effort of the people, public and private sectors. Singaporeans were invited to be part of this co-creation effort. IDA received over 3,000 submissions of ideas from the people sector. More than 350 industry and government leaders also provided invaluable opinions and suggestions to make this plan relevant for all.

The journey forward will have its fair share of challenges given the rapid pace of socio-economic and technological changes. New possibilities will emerge and the landscape may change dramatically. It is therefore important to ensure that iN2015 is a living plan that evolves with change. To conclude, I am grateful for the invaluable contributions of our Board members. I would like to take this opportunity in particular, to thank our former Board members who have completed their term of appointment. They are Mr Lee Seiu Kin, Mr Low Check Kian, Mr Charles Ormiston, Mr Seng Han Thong and Mr Wong Toon King. I also like to take the opportunity to express my gratitude to IDA staff, our partners in the industry, and other agencies for their support in the past year.

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LAM Chuan Leong Chairman, IDA



chairman LAM Chuan Leong

Ambassador-at-Large Ministry of Foreign Affairs

deputy chairman YONG Ying-I

Permanent Secretary Ministry of Health



BOON Swan Foo

Managing Director Agency for Science, Technology and Research



Frank BROWN

Director Colorzip SEA Pte Ltd







CHEW Hock Yong Deputy Secretary Ministry of Community Development, Youth and Sports



Christopher CHIA Chief Executive Officer Media Development Authority



HENG Chiang Gnee

President & Chief Executive Officer SembCorp Environmental Management Pte Ltd



Rupert G KEELEY

President & Chief Executive Officer Visa International Asia Pacific



LIM Chin Hu

President & Chief Executive Officer Frontline Technologies Corporation Ltd



LEONG Wai Leng

Charles LIM Principal Senior State Counsel Attorney-General's Chambers





Board of Directors

Stephen LIM **Chief Executive Officer &**



ONG Peng Tsin





SEAH Chin Siong

Country Managing Director Accenture Singapore



TAN Kian Chew Chief Executive Officer NTUC Fairprice Co-operative Ltd



SAW Ken Wye

Vice President Sales & Marketing Asia Pacific Region **Microsoft Operations**



Not in picture:

LEE Seiu Kin (Until 30 November 2005) Second Solicitor-General Attorney-General's Chambers

LOW Check Kian (Until 30 November 2005) Chairman NewSmith Capital Partners (Asia) Pte Ltd

Charles ORMISTON (Until 30 November 2005) **Managing Partner**

Bain & Co., Singapore

SENG Han Thong (Until 26 January 2006) Assistant Secretary-General National Trades Union Congress

WOON Toon King (Until 30 November 2005) **Co-Chairman** & Chief Executive Officer SilkRoute Holdings Pte Ltd

Members of IDA Board Committees

Development Committee

chairman SAW Ken Wye BOON Swan Foo Frank BROWN Christopher CHIA HENG Chiang Gnee Stephen LIM ONG Peng Tsin CHAN Yeng Kit

Establishment Committee

chairman YONG Ying-I Rupert G KEELEY SEAH Chin Siong TAN Kian Chiew CHAN Yeng Kit

PAA/GAA Committee

chairman YONG Ying-I HENG Chiang Gnee Rupert G KEELEY ONG Peng Tsin

(PAA – Project Approval Authority) (GAA – Grants Approval Authority)

Audit Committee

chairman LEONG Wai Leng CHEW Hock Yong Charles LIM LIM Chin Hu SEAH Chin Siong





WU Choy Peng Deputy Chief Executive & Government Chief Information Officer (Until 14 July 2006)

TAN Geok Leng Chief Technology Officer & Senior Director (Technology & Planning)

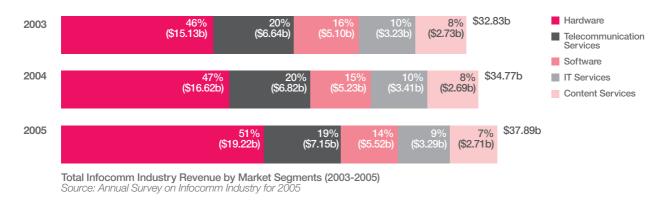
> LEE Fook Chiew Chief Financial Officer & Senior Director (Corporate Development)

> > LEONG Keng Thai Deputy Chief Executive & Director-General (Telecoms)

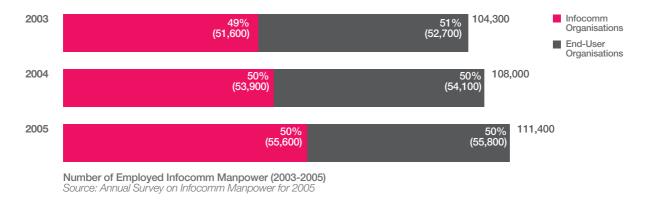
CHAN Yeng Kit Chief Executive Officer

Infocomm Statistics

In 2005, the revenue of the infocomm industry grew by **8.9%** to reach **\$37.89 billion**.



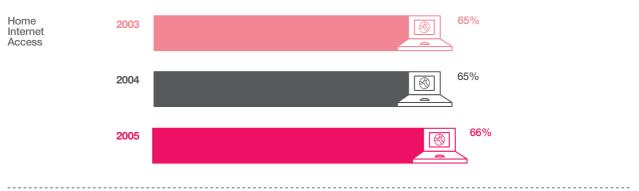
The number of infocomm manpower employed grew by **3.1%** to reach **111,400** in 2005.



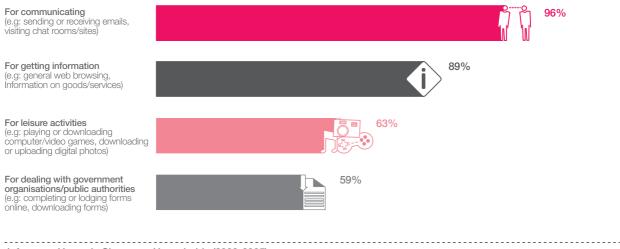


The proportion of households with access to a computer at home remained unchanged at 74% .

The proportion of households with access to the Internet at home was 66% in 2005.



Over 96% of Internet users used the Internet as a communication tool.



Infocomm Usage in Singapore Households (2003-2005)

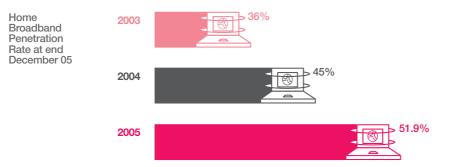
Source: Annual Survey on Infocomm Usage in Households and by Individuals for 2005

Infocomm Statistics

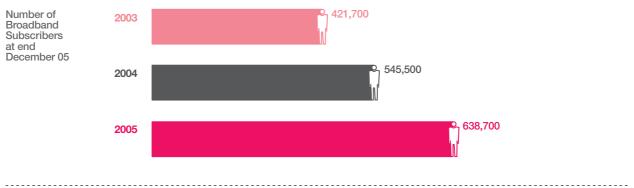
Mobile phone penetration rate exceeded **97%** in 2005.



Home broadband penetration rate was **51.9%** in 2005.



Broadband subscribers increased to 638,700 in 2005.



Source: Statistics on Telecom Services for 2005

Key Highlights in FY 2005

28 April 05

Government Embarked on Standard ICT Operating Environment (SOE) Project

IDA announced the \$1.5 billion SOE project which will comprise of a standard desktop environment and a standard network environment. The SOE would enhance the operating efficiency in government and is expected to reduce time needed to deploy new ICT services and improve the ability to respond to ICT security threats.



08 May 05

IDA Formed High-Level Committee to Spearhead New Masterplan

A high-level committee was formed to spearhead the development of Singapore's 10-year masterplan, Intelligent Nation 2015 (iN2015). The masterplan will grow the infocomm sector and transform key economic sectors. The development of iN2015 was a national co-creation effort and the public was invited to contribute their "wish lists" through a national competition – Express IT! iN2015.

24 May 05

IDA Issued Six Wireless Broadband Access (WBA) Spectrum Rights

IDA issued six WBA spectrum rights in the 2.3 GHz and 2.5 GHz frequency bands through an auction. Successful bidders have to offer services within 18 to 36 months and could start deployment of networks from 1 July 2005.

13 - 14 June 05

Singapore Hosted Inaugural imbX Ministerial ICT Forum

As part of the week-long imbX event, Singapore hosted the first Ministerial ICT Forum. Ministers and senior officials from 11 countries from the region were engaged in a fruitful discussion on VoIP.

IDA also hosted the 5th Asia Pacific Forum on Telecommunications and ICT Policy and Regulation during the week.



22 June 05

IDA and AGC Embarked on Review of Electronic Transactions Act (ETA)

IDA and AGC started on the review of the ETA that was enacted in July 1998. A public consultation was conducted to invite comments and inputs.

4 July 05

SGNIC Trials Multilingual Domain Names

SGNIC launched a trial for Chinese and Tamil domain names. The trial offered users an additional option to make their Internet presence felt.

Key Highlights in FY 2005

22 July 05

Singapore Opened First RFID Test and Compliance Centre in South East Asia

NOL and Sun Microsystems opened the Advanced Technology Centre which is South East Asia's first RFID test and compliance centre. The Centre will help position Singapore as a leading RFID infrastructure provider and enhance its competitiveness as a global integrated logistics hub.

27 August 05

IDA Awarded 20 National Infocomm Scholarships (NIS)

Twenty bright infocomm students were awarded the NIS which was set up in partnership with leading infocomm companies in Singapore. This is also the only government-industry scholarship which allows scholars to be nurtured by leading infocomm companies during their course of study and attachment.



8 September 05

IDA Launched Electronic Numbering (ENUM) Pilot Trial

IDA appointed SGNIC to conduct an ENUM pilot trial to test the technical and commercial feasibility of innovative ENUM services.

Companies invited to participate in the trial were required to provide a suite of services such as ENUM registration, server hosting and other ENUM-based services.

13 September 05

Singapore and Kuwait Further Collaboration on e-Government

Singapore and the State of Kuwait signed a second Memorandum of Understanding (MOU) on e-Government co-operation following the success of the first.

The two states will collaborate in two areas. First, Singapore will serve as an Advisor to Kuwait on IT and e-Government matters. In addition, both states will select suitable private sector suppliers to implement projects identified under the e-Government Blueprint established earlier.



14 September 05

IDA Distinguished Infocomm Speaker Series – Scott McNealy, Chairman, Sun Microsystems

Scott McNealy shared his views on the role of technology in the Age of Participation and how technology can provide universal connectivity between individuals, communities and organisations.



14 October 05

IDA and Cisco Systems Collaborate to Explore Next-Generation Network (NGN) Technologies

IDA and Cisco Systems signed an \$18 million three-year Memorandum of Intent to advance Internet Protocol (IP) networking in Singapore. The investments focused on three areas: the deployment of NGN technologies; the development of skilled infocomm network professionals; and the establishment of a Singapore Solutions Centre in Singapore to help local enterprises bring their products and solutions to market.



24 October 05

IDA Approved Revisions to SingTel's Reference Interconnection Offer (RIO)

IDA approved revisions to SingTel's RIO which provides the telecoms industry with a standard agreement when leasing or connecting to SingTel's network.

The revision followed the conclusion of IDA's first triennial review of the Telecoms Competition Code in March 2005. The RIO is now better aligned to the revised Code requirements.

17 November 05

IDA Announced Infocomm Manpower Development Roadmap

The S\$150 million Infocomm Manpower Development Roadmap is a joint effort between the government and industry to develop infocomm professionals into globally-competitive players, enable general workforce to be savvy infocomm users and nurture students to be future infocomm talents.

The Express IT! iN2015 competition launched on 6 May 2005 sought views from the public on the topic "Infocomm and I in 2015: How Technology can Help Me Learn, Work and Play". Over 3,000 entries were received. Winning visions of a colourful infocomm future for Singapore were presented through poetry, multimedia, essays and drawings.



2 February 06

IDA Appointed Six New Board Members

IDA appointed six new members to the Board. The new members, which included four industry captains and two public sector officers, will bring to the Board diverse experience from both the Infocomm industry and the public sector. The 17-member Board will guide the work of IDA and help shape Singapore's infocomm landscape.

3 March 06

Singapore Announced Next Generation National Infocomm Infrastructure (Next Gen NII)

Plans for Singapore's Next Gen NII were announced in Parliament. It will have two components: a wired broadband network that will deliver ultra-high broadband speeds to all homes, offices and schools; and a wireless broadband network that will offer pervasive connectivity around Singapore.

13 March 06

First Infocomm International Advisory Panel (IAP) Convened in Singapore

The high-level panel convened in Singapore to provide feedback and new ideas for Singapore to capitalise on growth opportunities in the global marketplace.

The business leaders at the first meeting included William Green (Accenture), Narayana Murthy (Infosys Technologies), Ann Livermore (Hewlett-Packard) and Craig Mundie (Microsoft).



16 March 06

NIS Expanded to Include Fast-Track Programme

NIS was expanded to include 40 positions for a special fast -track Singapore Management University (SMU) – Carnegie Mellon University Programme.

The 4 1/2 year programme will allow SMU students to graduate with a Bachelor of Science (Information Systems Management) degree from SMU and a Master's degree in an IT specialisation from Carnegie Mellon University.

Snapshot Future... Building Opportunities Ahead





Snapshot Future... Building Opportunities Ahead

The industry registered healthy growth and continued to serve as an engine of growth for Singapore.

In 2005, the revenue of the infocomm industry grew by 8.9% to reach \$37.89 billion. External demand, up by 11.0%, provided much of the growth impetus.

The numbers provide a quantitative measure of Singapore's achievements as a regional Infocomm Hub. The developments that contributed to these figures tell an even more exciting story.

BUILDING WORLD-CLASS INFOCOMM ENTERPRISES

Local enterprises continued to grow beyond the local market. In the past year, IDA's internationalisation efforts facilitated multi-million dollar contracts for companies. This included the \$40 million Turkish e-Government Gateway Project clinched by home-grown IT services provider CrimsonLogic in December 2005. To be jointly developed by CrimsonLogic and its Turkish partner Oyak Technologies, the one-stop electronic services portal will allow 70 million Turkish citizens and businesses to interact and transact with over 30 public sector agencies.

Besides e-Government contracts, local infocomm companies such as System Access and NCS have been pursuing opportunities in financial services and logistics sectors. These companies have also started to penetrate emerging markets in the Middle East, Eastern Europe and Africa.

China remains a key market for many local companies. Together with the Singapore infocomm Technology Federation (SiTF), IDA continued to help Singapore companies enter the China market through activities of the Singapore Solutions Centre in Shanghai.

In the Middle East, IDA has helped to increase the branding of Singapore infocomm companies through collaborations with several governments in the area of e-Government consultancy.

Strategic Collaborations

Last year, IDA strengthened collaborations with Oracle, Sun Microsystems, Hewlett-Packard, IBM, Cisco Systems and local enterprises in areas such as grid computing and next generation networking technologies. Through partnership programmes such as the infocomm Local Industry Upgrading Programme (iLIUP) and Overseas Development





Programme (ODP), IDA helped forge winning partnerships between infocomm MNCs and local enterprises.

To date, the strategic partnerships have resulted in more than 80 new infocomm products and generated about \$46 million in revenues from both local and overseas markets. The collaborations also deepened the capabilities of local infocomm enterprises that have participated in these partnerships.

As an infocomm hub in the region, Singapore continues to attract MNCs. IDA hosted prominent personalities such as Bill Gates, Chairman of Microsoft Corporation and Scott McNealy, Chairman of Sun Microsystems under the IDA Distinguished Infocomm Speaker Programme. These speakers provided the local industry with insights of infocomm trends and business strategies.

Web Services

Web Services continued to gain momentum in Singapore as the collaborative technology stimulated some \$70 million investment spend, created more than 290 jobs and generated \$450 million in infocomm revenue over the past three years. With this, adoption of Web Services amongst businesses now stands at 14%, up from 8% in 2003.

DEEPENING MANPOWER CAPABILITIES

The number of employed infocomm manpower grew by 3.1%, from 108,000 in 2004 to 111,400 in 2005. This is a new high in infocomm employment. In the same period, the number of job vacancies has also doubled with an increase in the demand for higher-end and value-added jobs. The jobs will be in areas such as technology research and development, digital media, web development, infocomm consultancy and project management.

IDA continues to work with the industry to develop the required talent pool to support the growth of the infocomm industry and the demand for infocomm professionals in other economic sectors.

Infocomm Manpower Development Roadmap

In November 2005, IDA announced the Infocomm Manpower Development Roadmap to boost Singapore's infocomm landscape. Jointly developed with the industry, the Roadmap aims to develop infocomm professionals that are globally-competitive, complemented with a general workforce which is infocomm-savvv. It also aims to develop future infocomm professionals who have not only technical knowledge but domain skills and business sense, to be techno-strategists.



Snapshot Future... Building Opportunities Ahead

Infocomm Clubs

A key part of this manpower development strategy includes public education and engagement. And when it comes to education, IDA believes in nurturing potential infocomm manpower from young.

Some of the programmes under the Roadmap are being rolled out in primary and secondary schools, and junior colleges. These include the Infocomm Clubs initiative which excites students about the opportunities in the infocomm industry and profession. The Infocomm Club is now offered as a Co-Curricular Activities (CCA) in schools nationwide. As of March 2006, more than 40 Infocomm Clubs with over 2,000 members have been formed.

National Infocomm Scholarships (NIS)

To further attract top talents to the Infocomm profession, IDA together with 14 industry players committed to sponsoring the best and brightest to drive future growth through the NIS programme. An additional \$30 million was injected into NIS and a total of 200 scholarships will be offered over the next five years.

The NIS was expanded to include a fast-track programme which is a collaboration between the Singapore Management University (SMU) and Carnegie Mellon University (CMU). The programme will allow SMU students to graduate in a shorter time with both a Bachelor's degree from SMU and a Master's degree with specialisation in IT from CMU.

STRENGTHENING THE INFRASTRUCTURE AND CREATING A CONDUCIVE BUSINESS ENVIRONMENT

Together with a world-class manpower, a sound infrastructure and competitive business environment form the foundations of a vibrant Infocomm industry.

As technologies improve and business conditions change, there is a need to upgrade and fine-tune the physical infrastructure and public policies to ensure both private enterprises and the public can take advantage of the new opportunities in the industry.





Building a New Digital Super-Highway

Singapore's plans to build the Next Generation National Infocomm Infrastructure (Next Gen NII) was announced in Parliament by Prime Minister and Minister for Finance, Mr Lee Hsien Loong. This infrastructure will have two key components: an ultra high-speed Next Generation National Broadband Network (Next Gen NBN) and a pervasive Wireless Broadband Network (WBN).

When completed, the Next Gen NBN will offer ultra-high broadband symmetric speed of 1Gbps and above, connecting all homes, schools and businesses including those in the HDB heartland and private developments. The WBN will offer pervasive connectivity around Singapore, complementing the Next Gen NBN for broadband access on the go. These networks will position Singapore as a leading infocomm nation and enhance its economic competitiveness. On March 2006, IDA invited the industry to contribute their ideas and suggestions for the Next Gen NII through a Request-For-Concept (Next Gen NBN) and a Call-For-Collaboration (WBN). A formal Request-For-Proposal will be issued for Next Gen NBN while the Call-For-Collaboration for WBN will be awarded later this year.

Securing and Protecting Infrastructure

To further enhance Singapore's reputation as a trusted infocomm hub goes beyond installing reliable physical infrastructure. Information that flows through the network will need to be well-protected.

Towards this end, IDA embarked on various initiatives as part of the Infocomm Security Masterplan as well as the National Trust Framework of the iN2015 Masterplan so as to enhance the security of Singapore's infocomm infrastructure assets and services. Within the Singapore Government, measurements for infocomm security preparedness and business continuity readiness were initiated to assess Singapore's preparedness in cyber security. Similar initiatives are also planned for the rest of the nation.

Singapore will open a National Cyber-Threat Monitoring Centre (NCMC) which will provide real-time cyber threats detection and response to enhance network and information security on a 24/7 basis. This will be achieved through the establishment of the Cyber-Watch Centre (CWC) and the Threat Analysis Centre (TAC). Where imminent cyber-threats or ongoing attacks are detected by the CWC, government agencies will be promptly notified to take preventive and remedial actions. The TAC has been operational since April 2005 and regularly publishes analysis reports for the Government.



Singapore has become part of the international Common Criteria Recognition Arrangement (CCRA) pact since July 2005. The CCRA is a mutual agreement with signatories from more than 20 countries that are responsible for the maintenance of the Common Criteria standard. Singapore is the first in ASEAN to participate in CCRA.

The Common Criteria is an international standard concerned with the evaluation and certification of the security of an IT product of system.

In the area of infocomm security manpower development, there are ongoing efforts to establish an association for infocomm security professionals to transform infocomm security into a distinguished profession akin to that of the accounting, legal and medical professions, with a recognised professional body. The industry was invited to provide feedback on the standardised qualifications, established career paths, and career development programmes that were developed.

Business Continuity and Disaster Recovery (BC/DR)

Efforts in strengthening the physical infrastructure and policy environment, coupled with the nation's macroeconomic stability, have given Singapore a competitive advantage in developing BC/DR activities.

In November last year, Hewlett Packard validated this by opening the HP Recovery Centre, its second BC/DR facility in Singapore. The 10,000 square feet centre can cater to as many as 100 customers to maintain, recover or resume their critical business processes in the event of unforeseen disruptions. To further enhance Singapore's status as a leading BC/DR hub, IDA proposed the world's first standardisation and certification programme for BC/DR service providers. Developed by IDA and the IT Standards Committee (ITSC), the standard specifies stringent requirements that companies have to adhere to, in order to ensure the quality of service delivery. The programme was introduced in Singapore and is currently being deliberated by the International Organisation for Standards and the International Electrotechnical **Commission Joint Technical** Committee 1 (JTC1) for adoption as an international standard.

Levelling the Playing Field

In October 2005, IDA also completed the review of the SingTel's Reference Interconnection Offer (RIO). This review follows the conclusion of the first Telecoms Competition Code



(Code) triennial review in March 2005. The RIO is now better aligned with the revised Code and will allow industry players better access to bottleneck facilities.

Supporting Convergence and Innovation

As Internet Protocol (IP) Telephony phenomenon gains momentum in the region, IDA also started preparing the ground for this new wave of convergence in Internet and telecommunications technologies.

IDA introduced a new policy framework for IP Telephony and Electronic Numbering (ENUM) in June last year to facilitate entry of companies interested in offering IP Telephony services in Singapore. IDA awarded VoIP numbers to operators and some have already started offering IP Telephony services. SGNIC, a wholly-owned subsidiary of IDA, announced an ENUM pilot trial scheme in September and invited the industry, notably IP Telephony providers, to participate in the trial. The aim was to see how numbers can be used innovatively across fixed-line, mobile and IP telephones.

Separately, IDA also responded to recent market development and public sentiments to start a review on the number portability solutions for both fixed-line and mobile phone services. The review was aimed at promoting competition and will further enhance consumer benefits.

In the area of legislation, IDA together with the Attorney-General's Chambers also started the final phase of the general review of the Electronic Transactions Act (ETA) and the Electronic Transactions (Certification Authority) Regulations (CA Regulations) last year. The ETA was enacted in July 1998 to create the legislative framework for electronic transactions on the Internet and facilitates electronic commerce. With new technologies and alternatives made available, it is timely to review if ETA amendments are necessary to accommodate these advancements.





Transforming Experiences... Innovative Sectoral Developments



For the past year, IDA continues to spearhead the implementation of infocomm flagship projects in key economic sectors. These projects transform businesses and services in sectors such as digital media, healthcare, manufacturing and logistics.

Companies in the various economic sectors are also fast becoming sophisticated in the use of infocomm technology as they embrace it to create new business models and optimise business operations.

MANUFACTURING AND LOGISTICS

Chem eStandards

Singapore-based chemical manufacturers and their supply chain partners can now tap into a set of global process standards that promise cost efficiency and ease of secured online communication through a common e-business XMLbased language called Chem eStandards. The standards were extended to Singapore last June and chemical companies can expect savings of 10% – 15% annually in the costs of order transaction, inventory, accounts receivable and transport administration. IDA has facilitated the adoption of Chem eStandards and will continue to promote further adoption and to initiate pilot projects in Singapore.

Radio Frequency Identification (RFID) Technology

Deployment of RFID technology gained momentum locally, particularly in areas to improve the efficiency of supply chains.

In just under two years, significant progress has been made since IDA launched a \$10 million RFID initiative to catalyse the development and adoption of RFID in Singapore. Besides being the first country in Asia to allocate RFID frequency, set up RFID test centres and training courses, numerous capability development and adoption projects were also seeded. All these have resulted in commitment by 27 companies to invest more than \$30 million in RFID projects and over 380 professionals were trained.

The manufacturing, logistics and fast moving consumer goods industries have been the earliest to embrace the technology. Chain master companies in Singapore, from manufacturers such as Hewlett-Packard to retailers such as NTUC Fairprice and Cold Storage, have committed to use RFID to track and monitor supply chains carrying goods worth more than \$900 million. Logistics companies such as NOL and YCH are also at various stages of implementing RFID to manage



their trans-shipment supply chains which, when fully implemented, will handle goods worth hundreds of billions of dollars.

In July 2005, Singapore opened the first RFID test and compliance centre in South East Asia. This centre, a collaborative venture between NOL and Sun Microsystems, will provide manufacturers with the necessary compliance testing and checks before tagging goods with RFID. For instance, the centre can help companies pin-point the optimal position to tag their products to ensure accurate reading.

IDA facilitated the setup of this Centre which not only helped position Singapore as a leading RFID infrastructure provider, but also enhanced Singapore's competitiveness as a global integrated logistics hub.

TradeXchange®

By October 2007, the trading and logistics community will have a new online trade platform that will make it easier to move goods and services in and out of the country. Called TradeXchange®, the secured platform will support Business-to-Government transactions and also caters to Business-to-Business information and documents exchange.

TradeXchange® will link up online systems such as Cargo Community Network, Jurong Port Online, Maritime and Port Authority (MPA) of Singapore's Marinet and PortNet, and other commercial systems to create efficiencies in electronic data exchange. IDA is one of the managers of TradeXchange® together with Singapore Customs and the Economic Development Board. Commercial service providers will be able to use the connection and information available in the TradeXchange® to develop and market new innovative services to the trading and logistics community. The integrated system for regulators, shippers and traders is expected to result in savings of more than \$75 million over 10 years for businesses from reduction in trade declaration costs and will help anchor incremental logistics activities in Singapore.

FINANCIAL SERVICES

In the financial services sector, companies have benefited from wider adoption of infocomm technology. For instance, insurance companies such as American Home Assurance Company, AXA Insurance Singapore and NTUC Income have implemented web services-based No Claims Discount solutions for Motor Vehicle Insurance.



With this solution, organisations can share information and process the insurance documents more efficiently. Now it only takes a few minutes to process documents that used to take 15 days to process. This has resulted in improved customer service for the companies involved.

Another example is NTUC Income which adopted straight-through processing technology for insurance related applications in October 2005. This project enabled seamless, efficient, secured and error-free transactions in submissions of proposals for all types of insurance, ranging from individual life and medical to commercial insurance. This initiative helped reduce processing costs and turnaround time, enabling NTUC Income to save operational costs while providing faster customer service.

DIGITAL MEDIA & ENTERTAINMENT

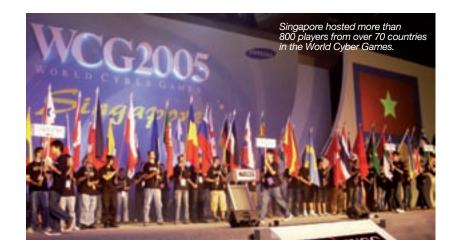
IDA continued its efforts to stake a greater claim in the growing digital media and entertainment industry and scored a series of coup in this area. In addition to Lucasfilm Animation, Electronic Arts and Seasky Netjoy have established their presence in Singapore. Technicolor Network Services partnered local companies to tap on Singapore's infrastructure to digitally distribute content to the rest of Asia.

In June 2005, the world's first Cross Continent Digital Content Transmission or CCTx took place. Movie trailers were successfully transmitted from the United States to Singapore. Singapore's position as an ideal games distribution and deployment hub was entrenched with the hosting of the World Cyber Games last year. More than 800 international players from over 70 countries competed in Singapore in the Olympics of online gaming.

Overall Digital Exchange activities – the processing, managing, distribution and trading of digital assets – contributed more than \$500 million transactions in Singapore last year.

HEALTHCARE SERVICES

The benefits of infocomm technologies were also seen in the local healthcare sector.



Pushing the Frontiers of Healthcare with Infocomm

Working closely with key healthcare providers in Singapore, IDA awarded twelve consortia under its Call-For-Collaboration (CFC) to develop healthcare services and solutions. The pilot projects included the development of innovative solutions to enhance patient care and safety by using wireless technologies to measure critical vital signs (temperature, blood pressure, ECG and pulse rate).

Nursing workflow and patient identification were also automated through the use of RFID technology. This pilot project can potentially be used for information sharing between community hospitals, acute hospitals and nursing homes to allow better management of medication usage for elderly patients.

An Eye for Detail

The Singapore National Eye Centre (SNEC) recently demonstrated a new telemedicine platform using a unique 3 Dimensional-High Definition system to transmit a live ophthalmic surgery procedure from Asahikawa Medical College (AMC) in Hokkaido, Japan to Singapore.

This first in the world 3D-HD technology transmission was sent via a new high-speed 155Mbps R&D link between Singapore and Japan. This was followed by a live transmission of an eye surgery, using the same technology, to 1,500 delegates attending a conference in Singapore.

While telemedicine is not a new phenomenon, the unique 3D-HD technology greatly enhanced the microscopic images such that the off-location doctors could view the exact conditions experienced by the operating surgeon. This successful transmission was supported by IDA as part of promoting the use of infocomm technology in the healthcare sector.

Trading Pagers for Mobile Phones

Tan Tock Seng Hospital (TTSH) used to rely on a pager system to reach doctors on duty. The hospital found that doctors were spending an average of 80 minutes a day returning calls while nurses spent between 40 and 200 minutes a day paging them.

With the support of an IDA grant, TTSH doctors traded in their pagers for mobile phones. With the mobile phones, doctors now receive text messages with more information and can prioritise their responses. There are plans to link the text messaging system to a computerised ordering system so that doctors will be informed automatically when their patients' laboratory results are ready. This will enhance medication management between doctors and patients at the point of care.





Transforming Experiences... Innovative Sectoral Developments

EDUCATION

Infocomm continues to transform our education landscape and we are currently focusing on providing infrastructure, digital resources and unique applications to form an independent learning experience. These elements form the key pillars of the EdVantage programme.

The aim of the programme was to strategically deploy infocomm in education to provide a learnercentric, collaborative environment that extends beyond the classrooms.

Under this programme, 15-20% of current schools will be test-beds for the innovative use of infocomm in teaching and learning. We are nurturing an additional 5% of schools to experiment with emergent technologies that may become more widely used in the future. These Schools of the Future will serve as beacons of innovative infocomm usage in the education setting, for Singapore and beyond.

GOVERNMENT SERVICES

Since the launch of e-Government Action Plan II in 2003, the Government has made significant progress in e-Government. Today, some 1,600, or more than 98% of all public services that can be delivered electronically, are available online. The aim to delight customers, whether individuals or businesses, with convenient and easy-to-use e-services is affirmed by the e-Government Customer Perception Survey conducted in Mar 2006, where:

- 86% of customers who transacted with the Government did so electronically at least once in the past 12 months.
- of those who transacted with the Government electronically, almost 9 in 10 were satisfied with the overall quality of the electronic services used.

To provide users with a seamless service experience, 15 integrated multi-agency e-services were implemented, with each reducing customer interactions with government by at least 50%. One of them was the Online Business Licensing Service (OBLS).

OBLS allows businesses to apply. update, renew or terminate any of the 82 online business licences, issued by 18 government agencies, in a single online transaction. This saves businesses from having to make separate trips to different counters, completing many online forms at the various agencies' websites or providing duplicate information to multiple parties. The licence process review also led to a 10% reduction of the licences issued. Since its launch in January 2004, more than 55,000 transactions have been made. OBLS was awarded the prestigious United Nations Public Service Award in





the category of "Application of Information and Communication Technology (ICT) in Government: e-Government" in May 2005.

In an effort to enhance operating efficiency and corporate identity, IDA announced in April 2005 that the Government will embark on a Standard ICT Operating Environment (SOE) project. A standard ICT operating environment means that agencies will have a standard desktop environment and a standard network environment. A standardised environment will reduce the time and costs required to implement new ICT services and minimise incompatibility problems. For example, anti-virus patches can be distributed speedily to all desktops and servers in the event of a virus threat. Today this cannot be done centrally, personal site visits have to be made. With a standardised environment, servicewide systems can also be deployed faster and at lower cost, as there is no need to test the new system in multiple environments. After accounting for setup cost as well as recurrent costs, the Government is expected to realise at least 30% net savings per year once the SOE is fully deployed.

INNOVATIVE TECHNOLOGY THAT TRANSFORMS EXPERIENCES

IDA remains cognizant that infocomm adoption is not an end in itself, but rather a tool to enhance efficiency and effectiveness across private and public sectors. At the end of the day, it is the transforming experiences of the users that matter most.



Big Picture... Infocomm for Everyone





For the last three years, Singapore has been ranked among the top two most Networked Ready nations by the World Economic Forum (WEF) Global IT Report¹.

WEF's report is reflective of IDA's findings. Based on data² from 2005, 74% of households had access to personal computers, with 28% owning two or more in each home. Two out of every three such households (or 66%) enjoyed Internet access with 52% already on broadband. The Internet has also become the preferred mode of inter-personal communications in Singapore, with nine in ten (or 90%) using the Internet to send or receive emails. In the area of telecommunications, mobile phone penetration in Singapore crossed the 100%³ mark with more than one mobile phone subscription per Singaporean. The subscriber base for 3G services increased ten-fold from 21,000 subscribers to 317,600³ since it was launched in 1 January 2005.

Singaporeans are increasingly becoming more sophisticated in the use of infocomm technology. Besides using the Internet to send and receive emails or retrieve information, they are also using it for transaction purposes such as online banking or accessing e-services.

DELIGHTING AND CONNECTING CITIZENS

IDA continues to work closely with various agencies to improve the online delivery of government services. Today, all government services that can be placed online are already available on the Internet. Nearly 9 out of 10 Singaporeans who need to transact with the Government did so through electronic means⁴. Of this group, 85% of them were satisfied with the online service experience.

¹ The report ranks more than 100 economies in ICT usage among individuals, businesses and government, as well as scores the environment for ICT deployment and the readiness of economies to participate in and benefit from ICT developments.

² Annual Survey of Infocomm Usage in Households and by Individuals for 2005

³ As at the end of March 2006.

⁴ IDA/Ministry of Finance e-Government Perception Survey 2005



A new search engine called the Singapore Government Online Search Engine was implemented on the Singapore Government Online Portal. The new search engine serves to enhance the relevance of search results obtained for searches on Government-wide information and services on the Internet through the use of metadata tags. This will not only provide customers with more relevant search results, but also consistent user search experience.

In order to provide seamless experience in transacting with the Government, integrated e-services have been implemented. To date, 15 integrated e-services which cut across agencies have been implemented. These include information and services packaged for specific segments of customers, including NS men, youths, and senior citizens.

CitizenConnect

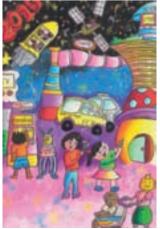
To further increase e-service accessibility to the public, a pilot community project named CitizenConnect was launched in October 2005. CitizenConnect aims to help citizens or residents who do not have access to, or need help with using computer or Internet, to transact online with the Government in their neighbourhoods.

In this community initiative, free access to the Internet is provided at selected community clubs and staff are on hand to help citizens access the Singapore Government Online Portal and perform online transactions with government agencies.

Affordable PCs for All

To create an inclusive information society, IDA had launched the NEU PC programme which helps subsidise the cost of PC purchases by low-income families. Since 1999. close to 20,000 PCs have been deployed to needy households in Singapore, of which nearly 75% who benefited are families with schoolgoing children. This community outreach was made possible with the philanthropic support of industry partners Microsoft, Pacific Internet and Trend Micro, with help from community associations like the Association of Muslim Professionals (AMP), Chinese Development Assistance Council (CDAC), Singapore Indian Development Association (SINDA), Society for the Physically Disabled (SPD) and Yayasan MENDAKI.







The vision of infocomm technology in the year 2015.

Big Picture... Infocomm for Everyone

In line with the growing sophistication of technology today, IDA continued to work closely with industry partners and associations to improve the NEU PC Programme in terms of scale and enhancement of the assistance package, so as to better meet the needs of students. The goal as identified in the iN2015 Masterplan is to have an all-inclusive digital society where no student will be denied a computer and Internet access because of financial difficulties at home.

EnterpriseOne

Businesses can now access a full suite of government and e-services using the EnterpriseOne portal that was launched in February 2006. This portal is supported by a telephone hotline and Enterprise Development Centres such as the Association of Small and Medium Enterprises (ASME).

iGov2010

Singapore is already recognised internationally as a leading e-Government. From 2002 to 2006, Singapore topped the Government Readiness component sub-index of the World Economic Forum Global IT Report. Accenture had also ranked our Government within the top three places in their Global e-Government Leadership Report since 2000.

Moving ahead, the "iGov2010", a new five-year infocomm masterplan, will guide public agencies in reaping synergies and exploring new opportunities as an integrated Government. By doing so, the Government hopes to do even better in delighting our customers, and connecting our citizens.



SECURING ONLINE TRANSACTIONS

As Singaporeans become more accustomed to electronic transactions, online security will be a concern for both users and providers alike. IDA launched the Infocomm Security Awareness Programme to promote security awareness among Internet users and equip them with knowledge and tips on infocomm security. In 2005, an Internet Security Survival Kit CD-ROM was developed and distributed to customers of Internet Service Providers.

TrustSg, the nationwide trust mark initiative to recognise online merchants with sound e-commerce practices, continued to see an increase in the organisations applying for accreditations. To date, more than 450 organisations are TrustSg

Mr Raymond Lim, Minister for Prime Minister's Office and Second Minister for Finance and Foreign Affairs unveiling iGov2010.



accredited. This shows that businesses offering e-transactions strive to adhere to high commercial standards specified in codes of practice. The TrustSg portal also recorded good visitorship, evidence that consumer have confidence in the trust mark.

SHAPING THE INFOCOMM FUTURE TOGETHER

During the planning of iN2015, Singaporeans were invited to express how they believe infocomm technologies would change the way they live, work and learn in the future. Over 3,000 entries were received from people from all walks of life. Many of the ideas were taken as inputs by the iN2015 committees when developing the infocomm blueprint.

The significance of the jointplanning exercise lies beyond the awards; it reflects IDA's continuing commitment to create an inclusive infocomm future that is for everyone.



Building Competency... Gearing Up for Tomorrow





At IDA, the people drive every aspect of the organisation's public service mandate. IDA invests resources and time to develop its people to reach their fullest potential. No effort has been spared to create a corporate environment that fosters learning and innovation.

IMPACTFUL AND EFFECTIVE ORGANISATION

An effective organisation structure brings out the best in people to achieve national and corporate objectives. In preparation for the implementation of the iN2015 masterplan, IDA made adjustments to its organisational structure in 2005. Groups and divisions were better aligned with the key thrusts of iN2015.

In addition, various internal organisational excellence initiatives were undertaken to improve the operational efficiency and effectiveness of IDA's processes and human resources. IDA continues to leverage on the Net Economic Value (NEV) and Singapore Quality Class (SQC) frameworks to achieve organisational excellence.

PEOPLE DEVELOPMENT

Leadership Management

An organisation structure is only as effective as the quality of its people and leadership. In conjunction with organisation structure reviews, IDA also refined its talent management and development system to better identify and groom high potential staff for succession into leadership positions. Succession plans were put in place to ensure minimal disruptions to IDA operations should key appointment holders leave to pursue other interests.

As part of leadership management, the inaugural IDA Leadership Conference was held in February 2006, bringing together the management team to share and forge a common understanding of IDA's roles and goals.

People Management

To accommodate the need for career change and progression, the IDA people management programme continued to focus on competencybased training, job rotation and external attachment stints for staff. This will enable IDA to continue to keep the best talents, while satisfying their desire for growth and development.

IDA introduced a private sector attachment programme where selected staff is sent to a private organisation within the industry for a two-year stint. This opportunity allows the staff to gain deeper insights of the industry and to build up their capabilities. On their return, IDA will also benefit from the staff's understanding of the industry's business and challenges.



High potential staff are sent for executive development programmes and given stretch assignments. For junior staff, IDA introduced a junior executive programme to enhance three key areas of competencies. Known as C3, the programme focuses on communication (written and verbal), change management and customer service.

Learning Exchanges

Collectively as an organisation, IDA is rich in experience when it comes to managing national-level projects and working with the industry. To preserve organisational knowledge and cross-division learning, a series of sharing sessions such as Brown Bag Project Sharing, visits to customers' sites and leadership experience sharing by senior management continued to draw good attendance.

ENGAGING THE PEOPLE

IDA continued to invent channels for staff to contribute ideas that will improve the working environment. In addition to the annual Organisation Climate Survey and the semi-annual staff conferences, an online forum – i-Jam was introduced to allow staff to provide more regular feedback. i-Jam was an effective tool to gather staff suggestions and a total of 355 ideas were received via this channel in the last financial year.

After successful rounds of the Reach-Out & Re-Charge (R&R) programme to engage Heads of Departments, this programme was extended to a wider group of middle managers and junior executives. The programme allowed staff to have better appreciation of IDA corporate objectives and helped built better networking and team bonding amongst them. The programme garnered good feedback from almost 200 participants.

WORK-LIFE BALANCE

In 2005, IDA was presented the Silver Award by the Health Promotion Board in recognition of its efforts in driving workplace health promotion. Some of the health-related events organised were health checks and fitness programmes for staff.

IDA continued to promote pro-family activities such as supporting the "Eat with your Family" initiative and a dedicated nursing room was set up for staff who are new mothers.

FUN@IDA

Fun@IDA is IDA's recreation club with an objective to bring emotional, social and physical wellness to all IDA staff. It offers a myriad of leisure, social and sporting activities for staff and their families.





Building Competency... Gearing Up for Tomorrow

Community Outreach

In December last year, Fun@IDA organised a pre-Christmas Duck Tour outing for the residents of its adopted home, the Singapore Cheshire Home. Everyone was in a festive mood as they sang Christmas carols during the tour. IDA staff were gratified by being able to give and share during the festive season.

To help staff better manage the stress of urban living, IDA regularly holds health talks on stress management and relaxation techniques. In addition, FUN@IDA also organised talks that are beneficial to the staff like parenting talks to help staff learn about communication with their children.

Strengthening Bonds

The ever-popular Chill-out and Movie Mania sessions continue to be Fun@IDA's main-stay programme to build strong relationships amongst staff outside professional interactions. Last year, our staff thronged the cinemas to watch Hollywood blockbusters Mission Impossible III and Harry Porter & the Goblet of Fire.

Fun@IDA also set aside a special day each year for staff to bring their children into the office with them. The Kidz@Work programme gave children the opportunity to see their parents at work and they in turn get to be entertained with educational activities at the end of the day.

Staying ACTIVE

To encourage staff to keep a healthy lifestyle, Fun@IDA organised weekly exercise classes in the clubhouse. Staff can choose Pilates, kick-boxing, Yoga and even belly-dancing.

The IDA ACTIVE Day kicked off at the Marina Promenade on 2 March 2006. Staff gathered for an afternoon of fun and perspiration as they participated in the work-out sessions and the jog around the promenade.

GEARING UP FOR TOMORROW

At IDA, we believe the best way to cope with the challenges of the future is to be ready for them. And there is no better preparation than equipping the very people who will face these challenges with the necessary skills.





The Singapore Network Information Centre (SGNIC) is a fully owned subsidiary of the IDA. Set up in October 1995, SGNIC administers the Internet domain name space in Singapore. As the national registry for ".sg" domain, SGNIC also administers the registration for second and thirdlevel domain names for com/org/net/edu/gov/per.sg domains via accredited registrars.

SGNIC formulates domain name registration policies in Singapore and collaborates with the international, regional and local Internet communities to ensure a stable and efficient operation of the ".sg" domain name space in support of applications provided over the Internet.



director Andrew HAIRE Assistant Director-General (Telecoms)



director TAN Geok Leng Chief Technology Officer & Senior Director (Technology & Planning)



Singapore Network Information Centre Pte Ltd

MULTILINGUAL DOMAIN NAMES

In line with the aim of becoming a regional infocomm hub and given that Singapore is a multi-racial, multi-lingual society, SGNIC conducted a six-month trial for Chinese and Tamil ".sg" domain names in July last year. It was open to individual and organisations both in Singapore and overseas.

The trial served as a good platform for SGNIC to address many technical and operational issues of registering non-traditional alphabetical characters as domain names. SGNIC is in the process of formulating the registration policies and refining the technical implementation for a commercial IDN launch by early 2007.

BOOSTING COMPETITION FOR '.SG' DOMAIN NAMES

SGNIC implemented a package of enhancements to its pricing and registrar accreditation frameworks in September and October 2005 respectively. This was part of the regular reviews of domain name registration policies for ".sg" domain names. These enhancements include a reduction of domain name prices for registrars and a more robust accreditation framework being implemented.

The reduction of domain name prices offers registrars cost-savings which they could then extend to their customers. The enhanced accreditation scheme on the other hand, provides for a more robust framework which balances the need to protect consumers with that of encouraging more competition in the domain name registration market.

ASIA PACIFIC TOP LEVEL DOMAIN (APTLD) MEETING

Besides overseeing a competitive local environment for the domain name registration, SGNIC also hosted the APTLD Members and Board Meeting in July last year.

The APTLD is a regional membership-based organisation for country-code Top Level Domain managers in the Asia Pacific. At the meeting, representatives from eight countries including Australia, Hong Kong, Japan, and Sri Lanka discussed technological and operational issues of national registries and countries' response to global Internet governance policies.