

CALENDAR OF EVENTS
April/May 2006

25 April 2006

2006 Industry Briefing on Business Opportunities for IT in the Public Sector

The annual briefing on Business Opportunities for IT in the Public Sector is here once again. Organised by the Infocomm Development Authority of Singapore, this is the single most important IT procurement briefing by the Government.

Attendees will hear about the major IT projects that are in the pipeline for Government agencies in financial year 2006. With the Government at the forefront of IT adoption and deployment, this briefing allows you to start preparing for Government IT tenders even before they are announced.

Event Details and Online Registration:
<http://www.eventpeople.com/idaindustrybriefing2006/index.htm>

Media Registration:
Please contact Sharon Lua at (65) 6211 1158 or email sharon_lua@ida.gov.sg

Venue: Raffles City Convention Centre
Time: 8.30am - 11.50pm

For more information please contact:
Patricia Tan at (65) 6273 3839 or email pat@eventpeople.com

iDA
SINGAPORE

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

16 - 19 May 2006

Grid Asia 2006

The National Grid Office is launching the second Grid Asia event on 16 - 19 May 2006 in conjunction with its partners. This series with the Grid Computing theme caters to everyone, from the interested individuals, practitioners and user organisations in the industry to the research and development community. Grid Asia promises to be an exciting major annual event for the region. It will bring together researchers and practitioners in Grid Computing as well as related technologies and applications.

Venue: Singapore Management University (City Campus)

To register, visit: <http://gridasia.ngp.org.sg>

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ISSN NO. 02194457

INFOCOMM NEWS FROM IDA Apr 2006 ISSUE: 27

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**Telecom Liberalisation
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We bring you an exclusive interview with IDA's Deputy Chief Executive and Director-General (Telecoms), Mr Leong Keng Thai

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High-level panel of strategic advisers sums up its deliberations

Supercomputing Made Easy: Pg 10
Dr Lee Hing Yan from the National Grid Office gives an insight into the National Grid Initiative

WAVE Going the E-way in June 2006: Pg 11



INFOCOMM-CENTRIC LIFESTYLE A HIT WITH SINGAPOREANS

INFOCOMM HAS BECOME a way of life for Singaporeans whether at work, home or play. This trend was revealed by the latest annual survey on infocomm usage in households and by individuals for 2005 that was released by the Infocomm Development Authority (IDA).

The proportion of households with access to a computer at home was 74 percent, compared to just 61 percent in 2000. 28 percent of homes also had two or more computers. Of these figures, 66 percent of homes had access to the Internet, with nine in ten in private housing having access, and six in ten for public housing.

The IDA survey also highlighted that household Internet penetration remained high with 61 percent of Singapore's resident population aged 15 and above being Internet-savvy. Besides using the Internet to increase productivity and quality of work, six in ten Internet users aged 15 years and above used the Internet for leisure, including playing computer games, downloading or uploading of digital photos, listening to online music, reading publications and watching films over the Internet.

The convenience of online transactions has also motivated more Singaporeans to go online for their transactions. There was a 10 percent increase in the number of Singaporeans shopping online, to 27 percent, compared to two years ago where only 17 percent were doing so. Online transactions and online banking were also extremely popular, with more than 40 percent of respondents completing some form of online

transaction in the past 12 months. Almost six in ten Internet users had online interaction with the government in the last 12 months, with 46 percent of Internet users completing or lodging forms online. More than 28 percent also used the Internet to make online payments to the government organisations.

NUMBER OF INFOCOMM PROFESSIONALS REACHES NEW HIGH

A new high was also reached in infocomm employment where the number of employed infocomm manpower grew by 3.1 percent from 108,000 in 2004 to 111,400 in 2005. The number of infocomm job vacancies has also doubled, with an increase in the demand for higher end, higher value-added jobs and qualified infocomm manpower, particularly in areas like Software Development, Infocomm Security, Database Management, IT Project Management and Web Services.

The survey also showed that the infocomm workforce was highly educated with 83 percent of the infocomm manpower employed having tertiary education. According to Mr Chan Yeng Kit, CEO of IDA, the survey results reflect a positive outlook for the infocomm industry, with an increase in demand for manpower in many areas. The figures show that demand is projected to rise by 3.4 percent between 2006 and 2007 meaning that infocomm professionals will be much sought-after within the infocomm industry as well as outside of it.

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NEXT GENERATION BROADBAND ANNOUNCED IN SINGAPORE

SINGAPORE'S VISION OF A connected future will see a wired broadband network that will deliver ultra-high broadband speeds to all homes, offices and schools, while a wireless broadband network will offer pervasive connectivity around Singapore.

These developments are part of Singapore's Next Generation National Infocomm Infrastructure (Next Gen NII) plan that was announced by Dr Lee Boon Yang, Minister for Communications, Information and the Arts in Parliament in March this year.

The Government aims for infocomm to become intrinsic to how Singaporeans live, learn, work and play and that anticipated demand will come from various sectors:

- ¥ Businesses using infocomm technologies (ICT) and the Internet, to develop a Mobile workforce.
- ¥ Education is increasingly multimedia in nature and students will benefit from a high-speed connection to do their work. Commercial schools are also exploiting online learning as a cost-effective training medium.
- ¥ Healthcare providers can leverage extensively on ICT to manage healthcare costs and deliver services more effectively. Medical data, such as medical x-rays and MRI, can be delivered quickly and remotely from a patient to a medical specialist for diagnosis.
- ¥ Grid computing, which pools computing resources, requires ultra high-speed connectivity. Sectors like the life sciences and digital media use Grid technologies for their heavy computational and storage intensive needs.

The carrier-neutral, totally-wired network called the National Broadband Network (NBN) will have ultra-high access speeds capable of beyond 1 Gbps, or more than 500 times the 2 Mbps of today. To complement NBN, the government will first work with the private sector to accelerate the deployment of the Wireless Broadband Network in key catchment areas like places of interests, central business district, and HDB town centres in the heartlands, to offer wireless access at highly affordable rates under a Call-For-Collaboration (CFC).



WIRELESS BROADBAND NETWORK CALL-FOR-COLLABORATION

AS PART OF SINGAPORE'S Next Generation National Infocomm Infrastructure (Next Gen NII) announced in March this year, the IDA has launched a Call-For-Collaboration (CFC) for its Wireless Broadband Network (WBN).

Data trends suggest that the exponential growth in network traffic will continue, and ultra-high speed broadband pipes are necessary conduits for the future. Infocomm infrastructure has been an enabler and a source of competitive advantage for Singapore, and the Next Gen NII will cement Singapore's infocomm hub status and open doors to new business and social growth for the country.

The Next Gen NII comprises a wired broadband network that will deliver ultra-high broadband speeds to all homes, offices and schools, and a wireless broadband network which provides pervasive connectivity around Singapore. Singapore's new digital super-highway for super-connectivity includes both WBN and the wired Next Generation National Broadband Network (NBN).

Through the WBN CFC, IDA is inviting interested operators and service providers to submit proposals for the deployment of wireless broadband coverage in Singapore. The goal of the CFC is to achieve the following objectives:

- ¥ Accelerate the deployment of wireless broadband by providing coverage in locations where users out of their homes, schools and offices can conveniently access wireless broadband services using data-centric infocomm devices.
- ¥ Catalyse the demand for wireless broadband services by increasing the number of wireless broadband users.

Submissions of CFC proposals must reach IDA on 5 May 2006 by 11am and can be downloaded from the IDA website (www.ida.gov.sg) under the sections: "Wireless", "Call-for-Collaboration", "Wireless Broadband Market Development".

INFOCOMM INTERNATIONAL ADVISORY PANEL SHARES VIEWS



THE INFOCOMM INTERNATIONAL ADVISORY PANEL (IAP), an initiative of the Infocomm Development Authority of Singapore, convened for its first meeting in March to give feedback and new ideas for Singapore to capitalise on growth opportunities in the global marketplace.

The high-level panel of strategic advisers, comprising leaders and visionaries of the infocomm industry, and chaired by Mr Lim Swee Say, Minister, Prime Minister's Office, summed up their deliberations with consensus that Asia's rise is real and sustainable and that Singapore has a role to play in Asia's rise.

The IAP members felt that the development of infocomm in Asia Pacific is progressing fast and they believe it will only get faster. The IAP's view is that Singapore needed to do three things:

- 1) become the innovation hub of the Asia Pacific and focus on a few core technologies;
- 2) aspire to become an export hub by translating all the technologies that result from innovation into useful solutions ahead of everyone else; and
- 3) become the trusted and secure hub of Asia Pacific.

WAVE brings you excerpts of comments made by the world's infocomm technology business leaders after the first meeting of the Infocomm International Advisory Panel:



William Green, Chief Executive Officer, Accenture

My job is to stay on the leading edge of technology and I am delighted to be here. I think what's going on here is important. It is leading-edge work and we found (the meeting) thoughtful, fact-based and practical, with an eye for the future. The summary given was exactly right. Singapore has had the 'heart of Asia' reputation for many years and there is no reason why it cannot continue to be that and even expand its role. There are a lot of hard things to accomplish but it is a tremendous opportunity for Singapore.

If there is an area of the world where leaders have confidence in, then Singapore is really the place.



Nicholas Donofrio, Executive Vice President, Innovation and Technology, IBM

The fact is that software and services are going to be important, so we also talked about the fact that we need to upgrade the higher education system in Singapore to be able to attract more talent here. That pretty much goes hand in hand with this whole idea of leadership, because in the end, the advantage of Singapore is the talent and capability of the people here.



Narayana Murthy, Chairman and Chief Mentor, Infosys Technologies

I believe that the intelligent island concept of the Singapore government will be implemented with perfection and with that, Singapore will become the Number One city in the world in terms of information infrastructure for the people and for corporations. I also believe that Singapore is uniquely placed to leverage the hardware centre of China and software industry of India.

The trust people have in Singapore, in its stability and peaceful nature, I think is second to none. I believe Singapore would be ideally placed to be the disaster recovery centre, or even perhaps, the data centre for multinationals, not just in this region but for other parts of the world. My desire is for Singapore to produce the maximum number of PhDs in computer science. It would be wonderful if Singapore becomes the aspirational place for people all over the region, perhaps from all over the world, to come here and get their PhD.



Ann Livermore, Executive Vice President, Technology Solutions Group, Hewlett-Packard

One of the areas that is certainly important is being able to nurture and encourage the startup industry, particularly in the technology world. There are a lot of investments made by the big corporations but many of the breakthrough and real innovation comes from small startup companies. Almost every successful startup, at least from our experience in the United States, was started by someone who came from bigger technology companies and had a great urge to do something themselves. I think being able to take advantage of the fact that many technology companies are in Singapore and have a lot of resources, can be a big advantage.



Craig Mundie, Senior Vice President & Chief Technical Officer, Advanced Strategies and Policy, Microsoft

Because Singapore is a nation state with a single level of government, it has an opportunity that many countries don't. We can get its regulatory affairs aligned with the converged environment in which all those new applications can be developed. I think Singapore has the opportunity to increase the rate at which innovation can take place, if they can eliminate regulatory impediments. We encourage the government to think about that.



Koh Boon Hwee, Chairman, DBS Group

Maybe I can give a practical and current example. This is a Japanese bank and it obviously runs like many banks, which are big users of IT. They obviously have their IT operation and it is currently run from Japan, and the organisation is looking at relocating the headquarters of their IT management infrastructure to Singapore, and this ties in with all the things that are being said. They are not looking at the lowest labour cost location in the world. They want to go to a place where IT professionals and IT talent is widely available. Singapore fits that bill. We are not the cheapest but we have a lot of talented IT people.

They also want to be in a location where they can bring in people from anywhere in their organisation around the world and know they can work there easily. We fit that bill. They also want a place where family can relocate to, a place where their family will feel comfortable living in, with a good education system, with a safe environment. In their view, Singapore fits that bill.

Most importantly the infrastructure here for telecommunication must allow them to manage the entire network in Japan remotely from here. This is what I think iN2015 (Intelligent Nation 2015) is about. No one can predict what will happen in 10 years' time, especially in this industry. But you can be sure if you stand still and do nothing, you are in yesterday's location.

THE WAY AHEAD FOR SINGAPORE S TELECOMS MARKET



Mr Leong Keng Thai, IDA Director-General (Telecoms)

IT HAS BEEN SIX YEARS since the Singapore Telecom market was liberalised. On this anniversary, we bring you an exclusive interview with IDA s Deputy Chief Executive and Director-General (Telecoms), Mr Leong Keng Thai.

HOW EFFECTIVE HAS SINGAPORE BEEN IN LIBERALISING THE TELECOMS MARKET SO FAR?

The Singapore telecoms market was fully liberalised in April 2000. I think the best way to measure the success of liberalisation is to look at how the market is today, and whether businesses and consumers have benefited.

In March 2000, our telecoms market was home to 13 facilities-based operators. Today we have 37, including 16 from overseas. For services-based operators, there s been a jump of more than 350 in six years.

With competition keener, this puts pressure on companies to innovate their service offerings and offer competitive prices, leading to more benefits to consumers.

GIVE US SOME EXAMPLES.

Take International Direct Dialing (IDD) for example. It used to cost about 95 cents to make a call to USA, but now, we can do it for as low as five cents. Not to mention we can now make virtually free international calls via the Internet and now have options like free incoming calls and per-second billing for mobile calls.

A competitive environment also means that market players will be eager to offer services riding on the latest technologies to attract consumers. For example, today s consumers can use their phones to surf the Internet and even watch TV.

We used to only have about 0.4 Tbps of submarine cable capacity. Now, in just six years, we have close to 28 Tbps. By opening up our telecoms market, foreign telcos are able to come in and invest in new cable systems that contributed to this leap. As a result, our businesses benefit from the improved international connectivity.

Opening up the telecoms market also benefited Singaporeans by creating more jobs. More than 4,300 jobs have been created in the telecoms sector from 2000 to 2005.

SO THERE ARE CLEAR BENEFITS TO INCREASED COMPETITION. BUT CAN SINGAPORE S DOMESTIC MARKET SUSTAIN SO MANY PLAYERS IN THE LONG RUN?

The fact that we have attracted a good mix of foreign carriers from all regions shows that others see the potential in gaining consumer dollars here.

But more importantly, Singapore is a business hub where companies can market their services to the rest of Asia from Singapore.

For instance, we are the first country in the world to establish a standard for Business Continuity and Disaster Recovery (BC/DR) service providers, which fortifies the trusted business environment that we offer. Together with our reliable infrastructure, competitive regulatory policies and strong IP rights protection, Singapore is ideal for doing business.

HOW DOES THE SINGAPORE TELECOMS MARKET COMPARE TO THE REST OF THE REGION?

In terms of competitiveness, we have a vibrant market with multiple players, including global ones like AT&T and BT. The sharp rise in popularity of telecoms services such as 3G, broadband and mobile over the years shows that consumers are enjoying the fruits of this competitive environment.

In regulatory matters, we are taking the lead in driving the adoption of new technologies. We are among the first regulators in the world to release a policy framework for IP Telephony and ENUM in 2005. We are also one of the first countries in the world to issue spectrum for wireless broadband access services in 2005.

WHAT REGULATORY CHALLENGES DO YOU FORESEE FOR THE NEXT 6 YEARS?

In the early stages of liberalisation, IDA s role was focused on facilitating the entry of new players. The next phase came when the market became increasingly competitive with multiple players, and we had to manage competition to, for example, ensure fair play.

In those two phases, there is a constant challenge in balancing the facilitating of new players and motivating incumbents. Hence, very soon after liberalisation, we put in place frameworks such as the Reference Interconnection Offer (RIO) and Telecom Competition Code to guide the market. RIO, for example, helps lower entry barriers so that new players can come in quickly.

But in areas which have become effectively competitive, we remove dominant licensee obligations and let market forces work. Moving forward,

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IDA will have to continue its work in reviewing these frameworks to ensure their relevance.

We are currently moving into a third phase, and we face the new challenge of an increasing convergence of the Internet, TV and telecommunications. As a result, telecoms service providers no longer only provide telecoms services, but may move on to look at content provision, and vice versa.

Our challenge is to adapt to this changing landscape. We need to address issues such as facilitating these non-traditional telcos, as they will be part of future telecoms growth.

NOW THAT THE TELECOMS MARKET IS LIBERALISED, WHAT S NEXT FOR BUSINESSES AND CONSUMERS?

There will be a big transformation in communications, greater competition and increased choices.

For one, Singapore s Next Generation National Infocomm Infrastructure (Next Gen NII) will offer super-fast speeds and spell more competition, more choices, and more competitive prices. It will also catalyse the convergence of telecoms technologies by opening the door to applications such as IPTV and HDTV.

It is impossible to speculate on all the future applications that will be made possible by Next Gen NII, except that Singapore will embrace these advanced technologies to transform the way we live, learn, work, and play.

KEY MILESTONES

April 1992

¥ Telecommunication Authority of Singapore (TAS) established as telecoms regulator

September 1995

¥ Liberalisation of IDD/STD payphone
¥ Licensing of new Public Internet Access Service Providers (IASP)

April 1997

¥ Introduction of competition for cellular telephone and paging services

October 1998

¥ Further liberalisation of the Internet access service provision market

September 1999

¥ Lifting of foreign equity limit on IASPs and Internet Exchange Service Providers

December 1999

¥ TAS and National Computer Board merge to become IDA

April 2000

¥ Full liberalisation of the telecoms sector
¥ Introduction of competition for Public Switched Telecommunications Services

September 2000

¥ Telecom Competition Code (TCC) issued

January 2001

¥ SingTel s Reference Interconnection Offer (RIO) approved

November 2003

¥ SingTel exempted from all dominant licensee obligations for the wholesale International Telephone Services (ITS) market and tariff filing obligation for the retail ITS market

December 2003

¥ Designation of SingTel s Local Leased Circuit as a mandatory wholesale service

January 2005

¥ Launch of 3G services

February 2005

¥ Launch of the revised Telecommunications Act and TCC

April 2005

¥ SingTel exempted from certain dominant licensee obligations in the International Capacity Services market

May 2005

¥ Auction on WBA spectrum, resulting in 6 successful bidders

June 2005

¥ Policy and licensing framework for IP Telephony and Electronic Numbering announced

July 2005

¥ Introduction of lifetime licences for six Class licence categories which do not require spectrum use
¥ Introduction of the Telecom Licensing System portal

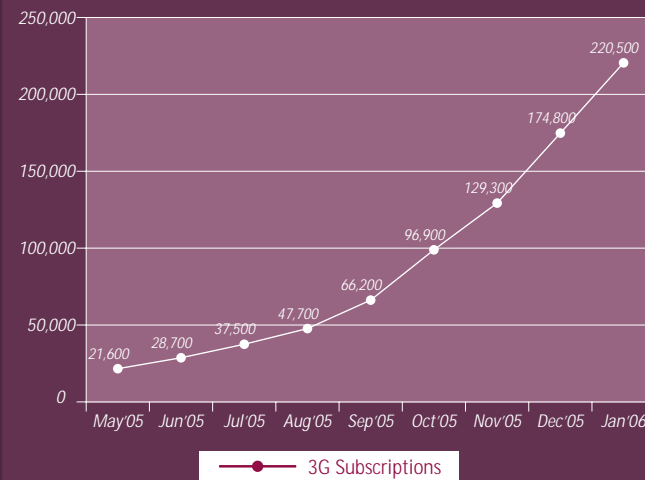
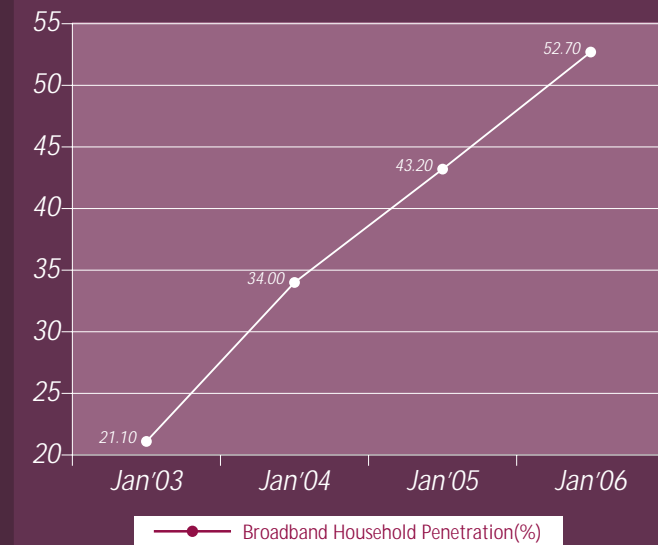
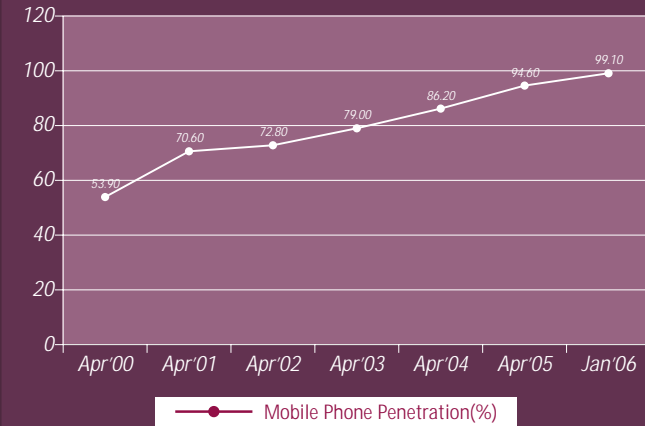
November 2005

¥ SingTel s revised RIO approved

TELECOMS FACTS AND FIGURES

THE TELECOMS SECTOR - DO YOU KNOW?

- ¥ Submarine cable capacity increased from about 0.4 Tbps in year 2000, to 27.98 Tbps today.
- ¥ More than 4300 jobs have been created in the telecoms sector from year 2000 to 2005.
- ¥ From May 2005 to Jan this year, 3G subscriptions numbers increased 10 times within the eight months.
- ¥ About 27 million SMSes are sent/received by Singaporeans daily.
- ¥ Telecoms service was the second highest contributor to total infocomm industry revenue in 2004.



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 YOU'VE USED INFOCOMM TO IMPROVE BUSINESS EFFICIENCY.

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RECOGNITION SPEAKS LOUDER THAN WORDS



National
Infocomm
Awards

2006

RECOGNISING EXCELLENCE
IN INFOCOMM INNOVATION

ARE YOU READY FOR THE LIMELIGHT? NATIONAL INFOCOMM AWARDS 2006

The National Infocomm Awards honour the best in Infocomm innovation in Singapore. Jointly awarded by the Infocomm Development Authority of Singapore (IDA) and the Singapore Infocomm Technology Federation (SiTF), it is the only national award that recognises Infocomm excellence in organisations.

Nominations can be made online at www.nia.org.sg.
 Closing date for nominations is **12 noon on Friday, 16 June 2006**.

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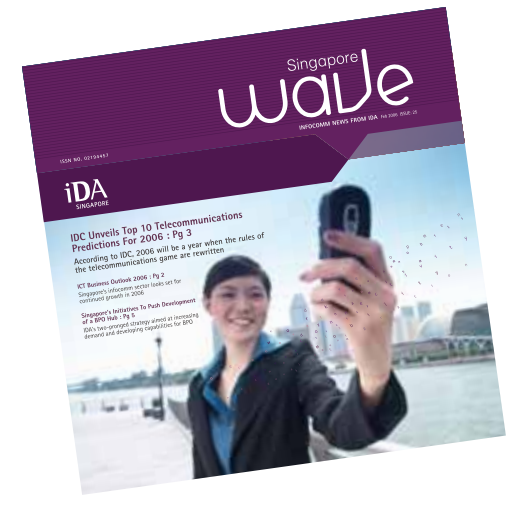
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ISSN NO. 10234477

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IDC Unveils Top 10 Telecommunications Predictions For 2006 : Pg 3
According to IDC, 2006 will be a year when the rules of the telecommunications game are rewritten

ICT Business Outlook 2006 : Pg 2
Singapore's information sector leads set for continued growth in 2006

Singapore's Pathways To Peak Development At A 2007 Pace : Pg 5
80% information security growth at 2006's record and increasing capabilities for SMEs