

CALENDAR OF EVENTS

March 2005

8 March

5th Infocomm Technology Roadmap Symposium
Singapore Infocomm Foresight 2015
Venue: Raffles Ballroom, Raffles City Convention Centre, Level 4

Join us at the Symposium, and hear first-hand the inaugural 10 year blueprint which IDA will be launching at the Symposium – Singapore Infocomm Foresight 2015. IDA will share about the Singapore Infocomm landscape 10 years down the road, where it is projected that the long term strategic significance will be anchored on the confluence of Infocomm and multi-disciplinary sciences.

At the Symposium, world luminaries and visionaries will speak on various technology evolutions and identify technology disruptions. You will also learn first-hand the strategic impacts of Nanotechnology and Biotechnology on Infocomm.

You will also be invited to visit the Infocomm Technology Roadmap 5 Exhibition that will showcase prototypes of emerging technologies. Gain a first-hand precursory experience of technologies that will be in the mainstream in time to come.

URL: <http://www.go2events.net/events/itr5/ITR5-Agenda.htm>

9 – 11 March

Game Developers Conference 2005
Venue: Moscone West Convention Center, San Francisco, USA

IDA is leading a delegation of Singapore infocomm companies to participate at the world's premier Game Developers Conference. The delegation will showcase local games capabilities, ranging from games service provision, publishing, to infrastructure and secured payment services. The participation is aligned with IDA's strategy to promote Singapore as a Digital Exchange, where digital content, such as online games are managed, deployed and distributed from Singapore to the rest of Asia. The conference comprises an independent forum and exhibition for expert games developers from around the world to share ideas, build skills, and learn about the latest tools and technologies. Come visit the Singapore Pavilion at Booth 848!

URL: www.gdconf.com

14 – 17 March

Showest 2005
Venue: Bally's Paris, Las Vegas, USA

ShowWest is the largest annual international convention for the motion picture industry. It is an exclusive gathering of the most prominent filmmaking industry players – the stars, directors, producers, and studio executives – responsible for creating the most successful motion pictures in the world. At ShowWest, among the seminars will be tracks dedicated to developments in the Digital Cinema space. There will be a line-up of renowned speakers to share insights of latest digital cinema developments around the world. Digital Cinema is one of the important thrusts aligned with IDA's strategy to promote Singapore as a Digital Exchange, where digital content, such as movies are managed, deployed and distributed from Singapore to the rest of Asia.

URL: www.showest.com

Singapore waje

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INFOCOMM NEWS FROM IDA Feb 2005 ISSUE: 14

iDA
SINGAPORE

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.

Head Office
8 Temasek Boulevard,
#14-00,
Suntec Tower Three,
Singapore 038988
Tel: (65) 6211 0888
Fax: (65) 6211 2222

U.S. Office
333 Twin Dolphin Drive,
Suite 145,
Redwood Shores,
CA 94065, USA
Tel: (1-650) 654 1185
Fax: (1-650) 654 8889

India Office
Unit 1, Level 3, Explorer
Block, International Tech
Park, Whitefield Road,
Bangalore 560 066, India
Tel: (91-80) 5115 6400
Fax: (91-80) 5115 6104

China Office
No. 268, Xizang Road
Central Unit 2602
Raffles City Shanghai
Shanghai 200001
People's Republic of China
Tel: (86-21) 6360 6622
Fax: (86-21) 6360 6699

Website: www.ida.gov.sg Email: info@ida.gov.sg

Ericsson launches its first Asian network operations centre in Singapore: Pg 3

The centre will provide world-class hosting services for customers in the region

Digital Exchange takes off in Singapore: Pg 6-7

Digital cinemas and online games gain momentum in Singapore

Singapore – voted as one of the world's Top 7 intelligent communities: Pg 2

Singapore's initiatives to develop into a digital age trading hub was key factor in choice





SINGAPORE - ONE OF THE WORLD'S TOP SEVEN INTELLIGENT COMMUNITIES

SINGAPORE HAS BEEN SELECTED AS one of the top seven intelligent communities in the world for 2005. Last month, the Intelligent Community Forum (ICF), a well-respected non-profit US-based broadband research group and think tank, announced that Singapore was selected as one of the top seven out of 18 finalists. The top seven communities represent trends and best practices that typify the direction that communities should take in order to grow in the Digital Age.

The other six making it to the much coveted list are Issy-les-Moulineaux (France), Mitaka (Japan), Pirai (Brazil), Sunderland (UK), Tianjin (China) and Toronto (Canada). Out of the seven, one community will be selected in June for the Intelligent Community of the Year.

Mr Chan Yeng Kit, CEO of IDA said: "IDA is pleased that Singapore is ranked as one of the most intelligent communities in the world once again. Singapore last won the inaugural Intelligent Community Award of The Year in 1999 and was also

previously listed as one of the most intelligent communities in the world for three years. This bears testimony that Singapore is serious in the adoption and development of broadband access technologies. Singapore's performance would not be possible without the strong collaborations and partnerships between government, industry, and its citizens."

The top seven were selected based on the following criteria:

- Significant deployment of broadband communications to business, government and residences, with government providing the catalyst
- Effective education, training and workforce development to build an able labour force for the "knowledge economy"
- Government and private-sector programs that promote digital democracy by bridging the digital divide
- Innovation in the public and private sectors
- Effective economic

development marketing that leverages broadband, labour and other assets to attract new employers

According to ICF, Singapore now rejoins the top seven list in 2005 because of the outstanding progress it has continued to achieve, and for its ambitious new vision for creating a Digital Age trading hub for the Asia-Pacific region - Echoing its leadership role as a trade port for physical goods. IDA's plans call for Singapore to become a center for the secure creation, management and distribution of digital content, from TV programs to images, movies to online games. The ICF report also noted IDA's recent pilot project which distributed new Indian films via satellite to secure servers in Indian movie theatres. The theatres reported a sharp increase in attendance, because local pirates were prevented from stealing the 35mm film reels.

"If Singapore can fulfill this vision, it will indeed become one of the world's great digital commerce centres," the ICF added.

Singapore wave

INFOCOMM NEWS FROM IDA

Editorial Team
Angeline Low
Dulcie Chan
Ng Sook Fun

Writer
Oo Gin Lee

Circulation Executive
Kartina Rosli

Design
atomz i! pte ltd

Singapore Wave is a monthly publication for executives worldwide. Readers are welcome to send their views via email to:

angeline_low@ida.gov.sg

Singapore Wave is distributed on a complimentary basis. To receive a free hard copy and/or an electronic version, email your request to Kartina at:

kartina_rosli@ida.gov.sg

and include your name, designation, company name and mailing address. You may also write or fax to us at:

Singapore Wave
IDA Singapore
8 Temasek Boulevard
#14-00 Suntec Tower Three
Singapore 038988

DID: (65) 6211 1998
Tel: (65) 6211 0888
Fax: (65) 6211 2227

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ERICSSON LAUNCHES ITS FIRST ASIAN NETWORK OPERATIONS CENTRE IN SINGAPORE

ERICSSON LAUNCHED ITS FIRST Asian nerve centre for its managed services operations in Singapore last month. The network operations centre (NOC) is Ericsson's first in Asia and seventh in the world. The centre, believed to be one of the first of its kind in the region, is equipped with leading-edge network management tools and technologies to support Ericsson's customers in Asia-Pacific with full network operations and maintenance. It is also fully equipped to provide hosting services in mobile applications and content management for its customers - the mobile operators and service providers in the region.

These mobile applications include Multi-Media Messaging Service (MMS), push-to-talk, streaming, pre-paid and content settlement. In addition, it offers content management and distribution of music, entertainment and games.

"There has been strong growth in managed service in Europe, the Middle East, North America and Latin America over the past few years, reflecting a trend between operators and vendors to work as partners to reduce costs and maximise revenues by bringing new and advanced services to market quickly and cost-effectively," said Mr Claes Odman, president and country manager of Ericsson Singapore. "We expect this growth to be replicated in Asia Pacific, particularly in the South-east Asian countries," he added.

Mr Khoong Hock Yun, assistant chief executive of IDA said: "We are pleased with Ericsson's decision to locate their regional network operations centre and service layer hosting here in Singapore. This decision is a



Ericsson's network operations centre in Singapore

validation of our status as a digital content hub and established infrastructure that serves as the ideal distribution launch pad to the Asia Pacific region."

Ericsson has six other similar NOCs worldwide located in Dallas (US), Rijen (Netherlands), Sao Paulo (Brazil), Stockholm (Sweden), Sydney (Australia) and Rome (Italy). Since 2002, Ericsson has announced 34 managed services contracts, with six of them in Asia Pacific.

SINGAPORE AND MALAYSIA SIGNS BILATERAL TRADE AGREEMENT ON TELECOMS EQUIPMENT

BILATERAL TRADE RELATIONS between Singapore and Malaysia received another boost last month with the signing of a new agreement which seeks to make it easier and faster for telecoms equipment to reach the markets of both countries.

Under the Mutual Recognition Arrangement (MRA) signed last month, the two countries have agreed to recognise each other's equipment conformity testing processes. Typically, telecommunications equipment needs to be tested in accordance with the requirements of the receiving country before it can be certified and approved for sale. Under the new bilateral agreement, Singapore and Malaysia will first accept equipment test reports issued by accredited test laboratories recognised by each country.

This means that telecoms equipment providers will now be able to lower their costs and reduce time to market for their products. They can also expect to shave off up to S\$1,200 per model and will be able get their

products to market up to 30 days earlier when the MRA is implemented.

The agreement was signed by the Director-General (Telecommunications) of IDA, Mr Leong Keng Thai and the Chairman of the Malaysian Communications and Multimedia Commission, Dato' V. Danapalan. The signing ceremony was witnessed by Singapore's Minister for Information, Communication and the Arts, Dr. Lee Boon Yang and Malaysia's Minister of Energy, Water and Communications, Dr. Lim Keng Yaik.

On the signing of the bilateral agreement, Mr. Leong expressed his confidence that this will further catalyse the pathfinder effect for the rest of the ASEAN members.

"I am heartened that we have come to this agreement with our closest neighbour and biggest trading partner, Malaysia. The agreement will bring much benefit to both the industry and consumers alike. This MRA will also help reinforce a strong and enduring partnership between the two countries. Being among the first few ASEAN countries to start work to implement the MRA, this agreement signed today will provide a head start to the overall MRA initiative."

This particular agreement covers telecommunications equipment such as radio, GSM, ISDN and PSTN equipment. This is known as Phase I of the bilateral MRA. In Phase II, the countries will go one step further by accepting equipment which is compliant to the technical specifications of each country, as certified by independent certification bodies.

This is the third such bilateral agreement under the auspices of the umbrella ASEAN MRA. Similar negotiations were launched between Singapore and Indonesia in April 2004 and between Singapore and Brunei Darussalam in May 2004.



(From left to right): Dato' V. Danapalan, Chairman, Malaysian Communications and Multimedia Commission; Dr. Lim Keng Yaik, Minister for Energy, Water & Communications, Malaysia; Dr. Lee Boon Yang, Minister for Information, Communication and the Arts, Singapore; and Mr Leong Keng Thai, Deputy General (Telecoms), IDA

TELUS INTERNATIONAL OPENS GLOBAL HQ IN SINGAPORE

CANADIAN IT SERVICE PROVIDER TELUS INTERNATIONAL (TI) has launched its global headquarters (HQ) in Singapore. Singapore was chosen for its excellent communications infrastructure, strategic location and first-class transport facilities.

TELUS International is a wholly-owned subsidiary of CDN \$7 billion TELUS Communications Inc, the second largest telecoms company in Canada. TI provides IT services, including enabled services, outsourcing, offshore application development & maintenance and contact centres.

Operational since November last year, the new global HQ here will carry out HQ and finance services operations and is the key decision making office for the company. This is the first time that TELUS is opening an office in Singapore.

Mr Mark Schnarr, executive vice-president of TELUS said at the global HQ's official launch last month: "With the aggressive growth of customers, revenues and investments in Asia, setting up a global headquarters in Singapore is a strategic move for our business."

"After careful evaluation of various countries, we are convinced that the excellent communications infrastructure, the strategic location, and the first-rate transport facilities make Singapore an ideal choice for us to easily



Mr Mark Schnarr, Executive Vice President, TELUS, giving an overview of the company's plans for Asia Pacific

embrace high growth markets in Asia and worldwide," he added.

The office opening was announced in a launch event graced by the High Commissioner of Canada to Singapore, His Excellency Alan Virtue.

"Canada and Singapore are both among the world's most connected and IT savvy countries in the 21st century," said HE Alan Virtue. "Our common strengths in IT, e-government and telecommunication services make us natural partners as we seek opportunities in Asia's enormous and growing communications and IT market," he added.

TI currently employs 861 people worldwide through its subsidiaries and joint ventures and has presence in the Philippines, Hong Kong SAR, and South Korea. Since it was founded in 1996, TI has experienced steady growth. In 2002, the annual revenue was S\$58.6 million, rising to S\$61.5 million in 2003, and S\$70.5 million in 2004. To further grow, TI intends to invest about S\$35 to S\$45 million in the near future in Asia Pacific and continue to build partnerships with organisations to deliver the most cost-effective services and solutions.

THE DIGITAL EXCHANGE SINGAPORE'S TRANSFORMATION INTO THE DIGITAL AGE TRADING HUB

SINGAPORE IS WELL KNOWN TODAY FOR its established status as one of the leading trading and commercial centres in Asia-Pacific and the world. In this new millennium, the epoch of the information age, Singapore's ambition has moved on to the next level – to become one of the world's greatest digital commerce centres.

This new vision, pioneered by the IDA in 2003, calls for Singapore to become a Digital Age hub for the secure creation, processing, management and distribution of digital content. This digital hub ecosystem that Singapore is building and developing is called the Digital Exchange, or DX in short.

Digital content business is poised to take the world by storm. Market research shows that online games revenues are expected to grow from US\$1.9 billion to US\$5.2 billion in 2006 before exploding to US\$9.8 billion in 2008. Similarly, the computer animation business is predicted to boom from an estimated US\$41 billion in 2003 to US\$158 billion in 2008. The Asia-Pacific region is expected to account for a large portion of this digital content pie.

With its strong infocomm infrastructure, established legal system for intellectual property protection, strategic geographical location and home to a melting pot of highly skilled professionals, Singapore is well-positioned to be a major player in this industry. While no bits and bytes will be left unturned, IDA has singled out three main areas that it will be focusing on – digital cinema, online games and computer animation.

GREAT ACHIEVEMENTS IN JUST TWO YEARS

In a short two years, Singapore has already achieved much in its DX initiative. The world's first digital cinema multiplex in the world was launched in Singapore in March 2004. Singapore currently has the highest density of high-resolution 2K digital cinema screens in the world. Today, there are a total of 21 digital cinema screens in Singapore, which makes up 15% of the total screens in Singapore. On a worldwide basis, this is believed to be the third highest number of digital screens in the world, after USA and China.



In the area of online games, the IDA has galvanized the industry to create a powerful ecosystem of game publishers, service providers, developers, distributors, infrastructure & technology providers, content localisation companies, online payment solution providers as well as media and marketing companies. This network of Singapore-Inc companies, called the Games Exchange Alliance, aims to offer a convenient one-stop centre for local and foreign game companies to tap into to bring their games to market faster and more efficiently. Another powerful initiative is the Games Bazaar, a pay-as-you-use hosting service which offers huge discounts of up to 80% for game companies to test and deploy their games using HP's servers and SingTel Expan's data networks.

SINGAPORE VOTED AS A LEADING INTELLIGENT COMMUNITY

Singapore's efforts in DX have not gone unnoticed. In January 2005, the Intelligent Community Forum (ICF), a well-respected non-profit US-based broadband research group and think tank, selected Singapore as one of the top seven Intelligent Communities for 2005. According to the ICF, "Singapore rejoins the Top Seven in 2005 because of the outstanding progress it has continued to achieve and for its ambitious new vision for creating a Digital Age trading hub for the Asia-Pacific region."



SINGAPORE VIDEO-ON-DEMAND COMPANY SIGNS MAJOR DEALS WITH LEADING HOLLYWOOD STUDIOS

Anytime, a Singapore-based video-on-demand (VOD) company has entered into arrangements with leading Hollywood studios for access to their movies for VOD services. This means that Anytime will now have access to over 20,000 library of movie titles from big names like Twentieth Century Fox, Sony Pictures, Warner Brothers and Universal Pictures to serve its VOD customers in the Asia-Pacific region.

Andrew Yap, CEO of Anytime said: "No other company has managed to secure this many titles from this many studios across this geography." He added that all four Hollywood studios have taken an equity stake in Anytime and is confident of his company's success in VOD. Anytime will initially sell VOD content to cable operators and ISPs in the region, but Mr Yap did not rule out that his company may one day sell direct to consumers and end-users.

As a boost to Singapore's move to become the digital hub of the region, Anytime will be basing its HQ in Singapore where the processing and distribution of the movies will be done. At the Singapore office, the movies from the studios will be encoded, compressed and encrypted before sending to their customers around the region. Explaining his choice of Singapore for the company's home base, Mr Yap said: "Intellectual property here is well protected and enforced by the government. In addition, the main shareholder YTC is also based in Singapore."

Anytime was started three years ago by Singapore-based YTC Group, Australia's Macquarie Bank and Los Angeles-based production company Coote Hayes Productions. Anytime's largest shareholder is the YTC Group which owns the Peninsula, Excelsior and Paramount hotels here as well as Spinelli Coffee.

This month, Australian cable operator TransACT will be Anytime's first customer, launching its VOD service to its cable TV customers. Next on the company's radar are locations with high video consumer base like Korea, Taiwan and Hong Kong.

LOCAL COMPANY DEVELOPS SUPERIOR DATA OPTIMISATION AND COMPRESSION TECHNOLOGY



LOCAL COMPANY MATRIXVIEW has come up with a digital data optimisation and compression technology that may even be better than existing technologies like JPEG, MPEG and MP3. According to the Singapore-based Australian-listed company, its "Adaptive Binary Optimisation" (ABO) technology can compress data and images to a much higher rate than the current industry standards, without loss of data quality. The technology is also being adapted for video and music files.

Desmond Goh, Assistant Vice President, Strategic Business Development at MatrixView said the ABO technology could compress image files at much higher ratios than existing compression methods. For example, medical images such as echocardiograms or ultrasound images of the heart can be compressed files by up to 30 times

at "lossless" quality, a significant improvement over existing industry standards like JPEG which only manages about 6 times compression with significant loss in quality. "This is possible," Mr Goh explained "because the ABO technology takes a very different approach to data compression."

"Traditional compression technology works by eliminating what it sees as unimportant data. ABO compresses by looking for similar objects and components in the data and 'stacking' them up," said Mr Goh. "When the data is decompressed, there is no loss of any data and 100% data integrity. This is particularly important in industries that deal with mission-critical data like medical, banking, healthcare and defence. In these industries, there is zero tolerance for data error," he added.

At the Kandang Kerbau Women's and Children's Hospital in Singapore, MatrixView has already put its technology into action. Previously, the hospital used to store all of its Electro Cardiogram (ECG) images in VHS video tapes. With an average of 4,000 ECGs a year, the hospital needed over 200 video tapes in just one year to store the data. And because regulations require the hospital to store these data for 6-7 years, the hospital was running out of space.

That's when MatrixView came into the picture with its EchoView box – an appliance that has the company's ABO technology built in. With the new system, the hospital was able to reduce the file size of the ECG images by 30 times. In the past, a 10 minute ECG segment took 500 MB of space, but now it only requires 16 MB – small enough to fit into a standard CD.

Apart from the KK hospital project, MatrixView is also working with a global bank to digitise their customer records, a top pharmaceutical research firm in China and a government-linked defence organisation in Singapore. Other implementations for the healthcare and document management industries will be announced shortly as MatrixView gears up to deliver keenly anticipated solutions to its clients and partners around the world.

EYE TO EYE: MR HOWARD SCHMIDT

SMALL AND MEDIUM businesses often think they are safe from hackers and other cyber criminals on the Internet. But they could not be more wrong. Mr Howard Schmidt, former Cyber Security Advisor for the US White House, said in an interview with Singapore Wave, that it is a mistake for small and medium businesses to think that hackers only target the big multi-national corporations.

"Cyber attacks are automated, they don't care who you are, they will attack everyone. People often don't realise they are a potential victim, and that the threats will affect them. They think it's going to happen to someone else, but not them. They are wrong," said Mr Schmidt, who was also previously Chief Security Officer for Microsoft Corporation.

All companies should put in place a comprehensive security program, he added, from training of employees to policies. "Stay current of patches, anti-virus software and basically make sure systems are configured and remain audited. And lastly if an incident occurs, make sure they report to authorities, so they can hold the criminals responsible," was the cyber guru's advice to businesses, big and small.

Governments too, need to ensure that their IT infrastructure is well secured, said Mr Schmidt. "Governments and private companies are the same, the only difference, is that governments are going for public safety and security instead of profits." In addition, many governments today depend on private organisations to run important services. In these cases, added Mr Schmidt, the governments need to ensure that these essential services are also kept secure.

INCREASING GLOBAL DEPENDENCE ON IT

The biggest challenge in the world today with regards to cyber security is that society is increasingly more and more dependent on IT. "We have computer systems running power generators, drinking water systems, transportation and other essential services. We need to ensure that they remain secure on a global basis," said Mr Schmidt.

In terms of cyber threats, Mr Schmidt said there were two main types – hacking and taking over computers by exploiting software vulnerability is one, while identity theft and credit card fraud is the second. While the second category is still much less than the first, phishing scams and ID thefts are growing faster, mainly because it is much easier to execute. "ID thefts, phishing and credit card fraud scams have become the electronic version of social engineering," he added.

The good news however, is that people globally are becoming more aware of such scams and are realising that legitimate companies should not be asking you for personal information like credit card and bank details over the Internet and e-mail. In addition, security solutions are becoming better integrated and easier to use. Today, consumers do not just buy a firewall, anti-virus and anti-spam, they get an integrated suite of all three, he added. For enterprises, patch management is now an automated process.

Companies and governments should aim to achieve a high level of reliability in their IT security plus be able to react quickly in the event of a crisis, and get back to full operating capacity in the quickest time possible, he added.



"We have computer systems running power generators, drinking water systems, transportation and other essential services. We need to ensure that they remain secure on a global basis,"

Mr Schmidt,
former Cyber Security Advisor
for the US White House

SINGAPORE INFOCOMM FORESIGHT 2015: SENTIENT SINGAPORE 2015

THE COMPUTER, THE MOBILE PHONE AND THE INTERNET have transformed our lives, dramatically changing the way we live, work and play. The pace of technological advancements has continued unabated. The convergence of computing and communications technologies with innovations from nano and bio-technologies herald the arrival of the Sentient Singapore 2015 vision. In this vision, sensors and intelligence riding on the infocomm infrastructure create a world of "Things that Think". This will be the era of people-centric technologies, proactive computing, sensor technologies and "small software." Besides bringing in new levels of ease and convenience for end-users, a new eco-system of hardware, software, systems-level players that exploit sentient smart spaces will be created. There will be tremendous opportunities for those in our infocomm industry who are prepared to rise up to the challenge.

INFOCOMM TECHNOLOGY ROADMAP

IDA is holding its 5th annual Infocomm Technology Roadmap (ITR5) series on 8 March. The findings on the future of infocomm technologies shaped by the coming of age of nanotechnology and biotechnology, and their applications to address these concerns, will be shared. Unlike previous ITR events, this year's series will take a 10-year projection instead of the previous 5-year forecast. This roadmap will be a supporting pillar towards the masterplanning of IDA's national infocomm blueprint for the next ten years, which will be unveiled in 2006.

Highlights of the ITR5 event include:

- **ITR5 Report**
The report is the culmination of an extensive research on global trends, technology developments and standards developments, as well as intensive interviews and feedback sessions with international and local thought leaders, visionaries, industry players, research institutes, government agencies and academia.
- **ITR5 Symposium**
The theme of ITR5 Symposium is "IDA Infocomm Foresight 2015". Eminent speakers from both international and local scenes have been lined-up. In particular, three international IT luminaries will be in Singapore to deliver the keynote addresses:

Dr John Seely Brown, previously the Chief Scientist of Xerox Corporation and Director of Xerox Palo Alto Research Center, will deliver the address on the "Global View of Infocomm in 2015".

Dr David Tennenhouse, Vice President of Corporate Technology Group, and Director of Research with Intel Corp, and previously the Chief Scientist and Director of Information Technology Office at DARPA (Defense Advanced Research Projects Agency), will deliver the address on "Proactive Computing".



Mr Paul Reynolds, Chief Executive Officer, British Telecoms Wholesale, will deliver the address on "21st Century Network, the Enabling Infrastructure for Growth".

- **ITR5 Exhibition**
In conjunction with the Symposium, an exhibition featuring new and emerging technologies that will have come to bear on the infocomm scene will be showcased. This gives the audience a first-hand precursory experience of the technologies that will be in the mainstream in 2015. Displays will include micro fuel cells for long-lasting power in infocomm devices, OLED (Organic Light Emitting Diode) displays that are self-emitting and do not require backlighting, thus making for better displays for portable electronics, sensor augmented aging systems, vehicle movement tracing using sensor networks, and many others.

Seats are very limited. Come join us on 8 March 2005 for an exciting day on futuristic technologies. For more details, please visit www.ida.gov.sg and select "Technology Development".

BROADBAND GROWS BY 50% IN ASIA-PACIFIC

BROADBAND ADOPTION IN ASIA-PACIFIC is on the rise. Recent provisional statistics from market research firm Gartner showed that fixed-line broadband connections grew by 50% during 2004 to 62 million subscribers.

Singapore grew by a respectable 24%, from 395,000 broadband subscribers to 490,000. This brings the broadband penetration rates up to 11.4% for Singapore. Other matured markets also registered good growth – Korea increased by 13%, Hong Kong by 20% and Taiwan by 22%.

The more nascent markets however saw amazing growth rates. The fastest growing major Asian market in 2004 was Thailand, which Gartner estimates grew by more than 1,000%, while the numbers of broadband connections in India, Malaysia and China all at least doubled.

"The strongest push has taken place in markets that have lagged the region's early leaders in broadband," said Andrew Chetham, a principal analyst at Gartner. "Growth remained robust and into double figures for the year even in markets with very high broadband penetrations." Mr Chetham added that the growth in Thailand was spurred on by deep price cuts in access charges requested by the Thai government. Broadband numbers there have climbed to more than 130,000 from just 9,000 at the end of 2003.



Despite its already huge broadband user base, China, the biggest broadband market in the region with more than 21 million connections, grew by another 100% as it continued its rapid churn of dial-up customers to broadband. However, overall penetration rates remain low, he added.

"China's growth with some of the cheapest broadband services in the world, down to US\$9 a month, has come at the expense of low yields, and the search for further growth is likely to

put even more downward pressure on revenues per user," said Mr Chetham.

Mr Chetham said that a key highlight of the year was the performance of Asia's leading broadband markets which showed that with the right mix of marketing, pricing and in some cases applications, it is possible to push broadband penetration even higher – even though it has already obtained very high levels.