

Major manpower development boost: Page 3

Singapore unveils a new \$120m manpower development roadmap to nurture a strong pool of ICT talent to support the country's future economic growth

Crimsonlogic clinches e-Government deal in Turkey: Page 6

Singapore-based Crimsonlogic and its partner seal a S\$40m e-Government contract to deploy a one-stop electronic services portal for Turkish authorities.

HP unveils second business recovery centre: Page 7

Hewlett-Packard bolsters its Singapore presence with the addition of a new facility to provide business continuity and disaster recovery services to businesses in the region.





Proud winners of the ExpressIT! iN2015 competition

STRONG SHOWING FOR EXPRESS IT! iN2015

MORE THAN 3,000 entries were received over two months in a competition to get Singaporeans to share their vision of how they expect infocomm technologies to impact their lives in the next 10 years.

Organised by the Infocomm Development Authority of Singapore (IDA), the Express IT! iN2015 competition was launched in May this year. It centred on the theme 'Infocomm and I in 2015: How technology can help me learn, work and play'. Respondents were free to submit their entries through a myriad of conventional and digital mediums, ranging from essays and drawings to digital photographs and videos.

The contest was aimed at engaging key audiences of the 'three Ps' of the iN2015 initiative. These are the people, public and private sectors respectively. It provided an avenue for Singaporeans to contribute ideas to help shape iN2015, a 10-year masterplan that aims to grow the infocomm sector in Singapore.

The top nine winners of the competition, which ended on 22 July, received their awards from the Senior Minister of State for Information, Communications and the Arts & Health, Dr Balaji Sadasivan, at the NTUC Centre Auditorium last month.

"The entries in the Express IT! iN2015 competition show that Singaporeans recognise

how technology can be used to our advantage," Dr Sadasivan said.

"Many of you painted a very colourful, but challenging, infocomm future for Singapore. Colourful because all the ideas show much interest in an infocomm-enabled future. Challenging because the ideas can only be implemented with the combined commitment of the government, industry and people. However, challenging doesn't mean impossible. It just means the work is now cut out for every one of us, but I am confident that we can create this future together," he stressed.

Ten-year-old Kean Lin Weijun's entry, a drawing of the digital future with virtual reality games, earned him the top prize of \$3,000 in the primary category, as well as \$10,000 for his school, Xingnan Primary School. The team from Tampines Junior Challenge came in tops in the secondary and pre-university category, earning themselves \$5,000 and \$10,000 for their school. Web designer Ms Jaqueline Aw walked away with the \$8,000 grand prize in the open category. Besides the top three prizes, 21 other entries were presented with merit awards.

All the contest entries can be viewed online at www.in2015.sg. The winning entries will also be making their rounds at five regional libraries in Singapore over the next three months.

Singapore
wave
INFOCOMM NEWS FROM IDA

Editorial Team

Winston Chai
Kartina Rosli
Ng Sook Fun

Writers

Ken Wong
Larry Loh
Victor Ng

Design

atomz il pte ltd

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

winston_chai@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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SINGAPORE UNVEILS \$120M MANPOWER DEVELOPMENT ROADMAP



Guest-of-honour Dr Balaji Sadasivan announcing the infocomm manpower development roadmap at the ExpressIT! iN2015 awards ceremony

IN A BID TO NURTURE a strong pool of IT talent to support Singapore's future economic growth, the IDA has unveiled details of a new \$120 million manpower development roadmap that is expected to benefit both students and workers alike.

A joint effort between the government and industry players, the five-year plan seeks to train local infocomm workers to become globally-competitive and sought-after professionals in the worldwide IT value chain. Beyond IT workers, the initiative also aims to increase the level of ICT competencies among the general workforce and develop students into infocomm talents of the future.

"This Roadmap is one of the foundational pillars of the iN2015 masterplan and will drive Singapore's efforts to develop an innovative, entrepreneurial, globally-competitive and infocomm-savvy workforce," said Dr Balaji Sadasivan, Senior Minister of State for Information, Communications and the Arts & Health. He was speaking at the Express IT! iN2015 awards presentation ceremony last month.

"There is something for everyone in this five-year Roadmap," he stressed.

Kick-starting the plan is a Student Infocomm Outreach programme that will pique interest in infocomm technologies among the young. From January next year, 30 schools will offer Infocomm Clubs as part of their Co-Curricular Activities programme. The effort is backed by the Ministry of Education and various industry players.

"Our industry partners have pitched in hardware and software to develop fun-filled yet industry-relevant curriculum in fast-growing infocomm technology areas such as digital media, games development, mobile software and applications development, as well as security and networking," Dr Sadasivan said. By 2008, more than 150 schools are expected to come on board, he added.

Another initiative targeted at students is the expansion of the National Infocomm Scholarship (NIS) to include overseas studies at top universities. A total of 10 overseas scholarships will be given out over a period of five years, each promising overseas exposure through attachments with multinational IT companies.

Apart from students, the Roadmap hopes to hone the capabilities of the general workforce and infocomm professionals with specific programmes to be announced over the next year.

For the general workforce, the pipeline includes programmes like 'Infocomm Skills@Work', an initiative to improve competencies among workers in key economic sectors so they can better leverage ICT for business and productivity improvements. In addition, existing competency and training initiatives, such as the Critical Infocomm Technology Resources programme (CITREP), will be expanded to include non-infocomm professionals.

"Regardless of your profession, you can use infocomm technology to become a more efficient and effective worker," said Dr Sadasivan.

According to IDA, infocomm professionals will also benefit from the Roadmap as there will be programmes to help them expand and improve their current skill sets. For example, the formulation of a National Infocomm Competency Framework will define the certification and competency requirements that are needed for career development. A Graduate Career Development Programme will also be introduced so that local Infocomm undergraduates can acquire certifications for skills that are demanded by the ICT industry, in addition to their academic qualifications.

WCG PUTS SINGAPORE FIRMLY ON WORLD GAMING MAP



Gamers parading their national colours at the opening ceremony

WHILE THE CURTAINS HAVE come down on the World Cyber Games (WCG) 2005 Grand Finals here, the success of this year's event has undoubtedly bolstered Singapore's prospects as a regional gaming hub.

Held from 16-20 November, the event, considered by industry watchers to be the Olympics of the cyber gaming industry, attracted over 39,000 spectators to the Suntec Convention and Exhibition Centre. Over 700 gamers from more than 67 countries paraded their national colours and slugged it out for a share of the S\$672,000 prize pool.

At the end of the showdown, the United States contingent emerged as overall champions, winning two gold medals and one silver in Counter-Strike, Halo 2 and WarCraft III: Frozen Throne. The Brazilian team swept both the gold and the silver medal in Need for Speed Underground 2, while Korea's Kyung Hyun Ryoo and Japan's Tomoyuki Inui took top prize in both Dead or Alive Ultimate and WarHammer respectively.

Singapore's Wilson Chia took home the country's first ever medal in the WCG with a silver in Dead or Alive Ultimate. While Singapore's Team Titans failed to bag a medal in the game Counterstrike, they put up an exhilarating performance in beating hot favourite Korea's Team MaveNCrew to progress to the single elimination round.

Although the fanfare has ceased on the WCG front, Singapore will continue its push to be the regional hub for the digital entertainment industry, according to Dr Lee Boon Yang, Minister for Information, Communication and the Arts.

"We are excited by the potential of the digital games industry. Digital games is one of the many creative industries in which Singapore can serve as a digital interactive hub. We see the digital gaming industry as a new growth sector bringing in significant returns to various industry groups including infrastructure service providers, multimedia content

developers, financial and payment services providers, and lawyers who specialise in intellectual property rights," he said in his closing address at the WCG Grand Finals.

"Our development agencies such as the Economic Development Board, the Infocomm Development Authority, and the Media Development Authority will continue to promote the digital entertainment industry through the various outreach programmes and international events such as Communicasia, World Cyber Games, and the Asia Media Festival," he added.



Singapore's silver medalist Wilson Chia



Singapore's Team Titans

DPM: MAKE HASTE IN ESTABLISHING BIOMETRIC STANDARDS



DPM Mr Wong Kan Seng calling for countries to work together to quickly develop biometric and security standards

COUNTRIES NEED TO work together to quickly develop common security and biometric standards to better combat terrorism, according to Mr Wong Kan Seng, Deputy Prime Minister of Singapore and Minister for Home Affairs.

"Such a project is an investment that would help restrict the space for terrorists' movement by tightening passport controls and border surveillance. Not only will it make mobility extremely difficult for terrorists, it will

also increase the chances of timely detection of suspects after an incident," he said in his opening address at the InterFest International Conference and Exhibition held here last month. The event brought together delegates from various countries to discuss issues such as e-passport and its implementation challenges.

In the light of heightened terrorism alerts and recent events like the Bali bombings, Mr Wong's rallying cry serves as a somber reminder of the pressing need for tighter border security. As part of Singapore's contribution towards the fight against terror, the government has been helping to promote the establishment of common biometric operating standards internationally. Among the many other initiatives being put into place, Singapore is also playing host to the fourth e-passport interoperability testing workshop initiated by the International Civil Aviation Organisation (ICAO).

This year's InterFest event, themed "Global Village, Secure Borders", featured a two-day testing session to help countries explore issues related to e-passport interoperability. The track drew participation from numerous immigration authorities around the world, government representatives, standards organisations as well as industry partners. A two-day business conference also followed suit, where issues like updates on e-passport, formally known as biometric and chip-enabled Machine Readable Travel Document, were discussed.

Through the collaborative efforts between public and private sectors, several security-related projects have already kicked off in Singapore. For example, IT service provider T-Systems is working with IDA to set up a Security Evaluation Lab for Common Criteria Certification 1 for international security standards. Another company, Silicomp FIME2, is currently exploring the possibility of establishing the world's first permanent Digital Identity Interoperability Lab in Singapore, along with plans to offer a comprehensive range of testing services here.

SINGAPORE CALLS FOR GREATER COOPERATION ON INTERNET GOVERNANCE

WHILE THERE IS A need to improve governance of the Internet, the responsibility should not be the sole charge of governments. Instead, the issue is better tackled through a partnership approach between governments, the industry and society-at-large, according to Dr Lee Boon Yang, Singapore's Minister for Information, Communications and the Arts.

The message by Dr Lee was delivered at the World Summit on Information Society (WSIS) held in Tunisia last month. The WSIS event serves as a platform for global talks on a host of Internet-related issues ranging from spam, privacy issues to online security. However, in recent years, much of the discussion at WSIS has centred on the issue of Internet Management. Specifically, countries like China and South Africa are arguing that poorer nations should have more say in how the Internet

is operated, as opposed to the current structure which appears to be inclined towards the United States and wealthier countries. In addition, they have called for the United States to relinquish its control over areas like the Internet addressing system to the United Nations.

In this regard, Dr Lee said Singapore supports the Joint Statement of the Association of South-East Asia Nations (ASEAN) on the issue of Internet Governance.

"We share the view that Internet Governance must be inclusive and responsive. We also accept that while there is a need to improve governance of the Internet. We should not view such governance as the sole domain of governments. The importance of continued technological

continued from page 5

Internet developments and deployment reinforces the advantage of a partnership approach whereby Governments, industry and civil society work together for the benefit of all who are touched by this wonderful invention," he stressed.

"The challenge before us is how to better serve public interests in a manner that respects the unique architecture and traditions of the Internet. Singapore believes that a top-down inter-governmental oversight structure will not be the right fit," Dr Lee said.

"Instead, we should work steadily and incrementally to enhance the structures that already exist from within. Both the Internet community and the inter-governmental community need that period of evolution

and transition to listen to and accommodate one another as well as to learn to work side by side," he urged.

According to Dr Lee, the answer to the Internet Governance debate is not in the creation of new oversight mechanism. Instead, existing structures should be evolved and strengthened to better respond to developments of the Internet and the interests of all affected parties.

As a positive step in this direction, delegates at WSIS have put their weight behind the formation a new body called the Internet Governance Forum under the auspices of the United Nations. This forum will be the focal point for a broad range of Internet-related issues and the first meeting has been planned for next year.

CRIMSONLOGIC CLINCHES E-GOVERNMENT DEAL IN TURKEY

SINGAPOREAN TECHNOLOGY companies are increasingly looking beyond local shores for global business opportunities and Crimsonlogic is the latest firm to reap the benefits of internationalisation.

The homegrown IT services provider last month sealed a sizeable e-Government contract with authorities in Turkey. Valued at 20 million euros (approximately S\$20 million), the project was awarded to Crimsonlogic and its Turkish partner Oyak Technologies.

Called the "E-Devlet Kapisi Project" (Turkish for e-Government Gateway Project), the project will see both companies joining hands to deploy a one-stop electronic services portal that will allow 70 million Turkish citizens and businesses to interact and transact with over 30 public sector agencies. The project is set to catalyse the Turkish government's move to become more citizen- and business-centric, an effort that authorities expect to help facilitate the country's entry into the European Union (EU).

Crimsonlogic and its local partner were eventually chosen despite keen contest from numerous international and Turkish companies.



Under the deal, Crimsonlogic and Oyak Technologies will implement the gateway over a one-year period and provide training and consultancy to all agencies involved.

According to a joint statement, the Crimsonlogic implementation will use both best-of-breed open-source and commercial off-the-shelf technologies based on standards like J2EE (Java 2 Enterprise Edition and XML (Extensible Markup Language). The solution will also incorporate Service-Oriented Architecture (SOA), Enterprise-Service Buses (ESB), and the European Interoperability Framework. The implementation of this e-Government gateway will serve as the foundation for Turkey's participation in Pan-European e-Government services, which require interoperability between the online offerings from different nations in the EU.

The E-Devlet Kapisi Project was first identified as a viable opportunity when Crimsonlogic participated in the Singapore Business Federation's mission to Turkey in November 2004, the company said.

"We are elated over this win as it marks yet another success in our internationalisation drive," said Acting CEO of Crimsonlogic, Mr Leong Peng Kiong. "It also has special significance to us as it is one of our largest gateway projects into the European market."

Having facilitated the deal, IDA hopes that Crimsonlogic's success will encourage more local ICT firms to pursue overseas opportunities.

"IDA is committed to working closely with home-grown infocomm companies to facilitate the export of Singapore ICT solutions and expertise overseas," said Mr Chan Yeng Kit, CEO, IDA. "This significant win by Crimsonlogic will strengthen the Singapore Infocomm brand in Europe. We hope that this will spur other Singapore infocomm companies to strike out and venture beyond our shores."

HP UNVEILS SECOND BUSINESS RECOVERY CENTRE IN SINGAPORE

HEWLETT-PACKARD HAS boosted its local presence with the addition of a new facility to provide business continuity and disaster recovery services to businesses in the region.

The 10,000 square feet HP Recovery Centre, the firm's second such facility in Singapore, can cater to as many as 100 customers across vertical sectors like financial services, healthcare and manufacturing. An additional 11,000 square feet of floor space has also been set aside for future expansion needs, HP said in a statement.

The centre provides services to help companies proactively maintain, recover or resume their critical business processes in the event of disruptions due to events like computer virus attacks, natural disasters or acts of terrorism.

Beyond remote recovery services, HP said it will also offer physical recovery services for both IT and non-IT business processes. Some of these offerings include work area recovery services, trading seats recovery services, IT recovery services, and multi-vendor platform recovery services.

To date, HP has invested US\$100 million in 64 business continuity and recovery centres worldwide. Besides the two in Singapore, the firm has a similar facility in Malaysia, two in Australia and one in Hong Kong.

"These days, businesses find themselves operating in an environment of increased regulation, with a higher reliance on IT and at the mercy of natural and man-made disasters," said Ms Tan Lee Chew, Managing Director & Vice President, Technology Solutions Group, HP Southeast Asia.

"Availability, security and compliance issues can have a big impact on our ability to achieve business and operational success," she stressed.

With their heightened awareness of the need for business continuity and disaster recovery strategies, companies also have to choose an ideal location for providing such services. In this regard, Mr Chan Yeng Kit, CEO, IDA, highlighted that Singapore's strategic location and its low risk of natural disasters puts it in good stead.

"Politically stable, Singapore has a pro-business government that has built a world-class IT and telecommunications infrastructure," he said.

In addition, Singapore is also the first country in the world to introduce a standardisation and certification programme for business continuity and disaster recovery service providers. Developed by the 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. HP is among the certified service providers under this programme.

MICROSOFT TALKS BUSINESS WITH NEW PRODUCTIVITY CENTRE

ARTICULATING THE TANGIBLE business benefits of technology implementations has been a perennial issue IT vendors have had to address. To better demonstrate how technology can help companies enhance their productivity and competitiveness, Microsoft and its partners last month committed a million-dollar investment over the next three years for the establishment of a new Business Productivity Centre (BPC) here.

To be located within Microsoft regional headquarters in Singapore, the new centre features integrated demonstration areas and simulation environments that allow businesses to experience various technologies in a more dynamic and hands-on manner.

According to Microsoft, the BPC will allow companies to experience real world business scenarios and show them how to address inefficiencies and "pain points" such as managing information overload and addressing poor document management practices. The technologies showcased will be that of Microsoft and its eight partners like Hewlett-Packard, Intel

atQuest, Avanade, CHASSAsia and Heulab. More local partners are expected to come on board in the coming months, Microsoft said.

Microsoft aims to host over 150 customer briefing sessions and reach approximately 200 end user organisations in Singapore within the first 12 months of the BPC launch.

"Microsoft's BPC affirms Singapore as an ICT hub where major technology vendors, such as HP and Intel, come together to move Singapore up the technology value chain and showcase the use of technology to increase business productivity to our neighbours in this region," said Mr Chan Yeng Kit, CEO, IDA.

"Visualising the business value of technology is the central idea behind the BPC and we want to show companies how the new world of work can fit into their environment and help improve business productivity," added Mr Barney Lau, General Manager of Microsoft Singapore.

MICROSOFT TEAMS WITH SITF TO SPUR MOBILE SOLUTIONS DEVELOPMENT

MICROSOFT HAS JOINED hands with the Singapore infocomm Technology Federation (SITF) to launch a new programme to accelerate the development of mobile solutions among local ISVs (independent software vendors).

Called "I Want Windows Mobile", the programme is open to all members of SITF's Wireless Chapter. It aims to provide local ISVs with the tools and technology support necessary to enhance their capabilities in the fast-growing market for mobile applications. In addition to receiving two

sets of Windows Mobile devices and the Windows Mobile 5.0 developer evaluation kits, ISVs can also participate in Microsoft seminars and workshops to help them develop or migrate their existing applications to the Windows platform.

"This collaboration will deliver two valuable benefits to members of the SITF Wireless Chapter," explained SITF Chairman Mr Stephen Lim. "Firstly, it will expand the capabilities of our local developers to develop solutions on the Microsoft platform, thus offering them a broader range of operating environments to develop their solutions on."

"Secondly, this initiative opens up new horizons for our local developers to offer their products and solutions to the regional market, and especially to China," he added.

In this regard, participating ISVs will get the chance to showcase their solutions at Microsoft's Mobile & Embedded DevCon (MEDC) event to be held in China in 2006. The MEDC China conference this year attracted over 1,000 participants and served as a showcase for a host of industry-specific mobile solutions for areas like finance, insurance, healthcare and automotive.

According to IDC, 63.1 percent of the world's mobile workers are based in Asia Pacific, signalling the strong potential in the regional mobile solutions market. "The fast-growing opportunities in the mobile market are being driven by a high level of innovation in both mobile solutions and content," said Mr Jason Lim, Director of Microsoft's Mobile and Embedded Devices Division in Asia Pacific. It is estimated that there will be over 1.685 billion active wireless subscribers worldwide by the end of 2005, Microsoft said in a statement.

The SITF Wireless Chapter will establish the infrastructure to drive ISV registration for this programme. In addition, it will look into providing support via additional funding or new initiatives to spur participation.



INFO BYTES

PACNET JOINS HANDS WITH SKYPE

Singapore-based Pacific Internet has inked an agreement with Internet telephony service provider Skype to deliver a co-branded version of its software here. The tool will be offered as a free download on the new Net Skype portal. Users will be able to use the Skypeout service to make unlimited PC-to-PC calls worldwide. In addition, Singaporeans can also purchase credits that can be used to make VoIP (voice over Internet Protocol) calls to mobile phones and fixed lines.

NEW MODULES FOR SINGAPORE'S ONLINE BUSINESS LICENSING SERVICE

Besides registering for new licenses, business owners can make use of new applications that have recently been incorporated into the Singapore government's Online Business Licensing Service (OBL). With the enhancements, companies can now update, renew or terminate 45 different types of licences through the OBL portal.

XILINX UPS INVESTMENTS IN REGIONAL HQ



Analysts' estimates support Mr Chellam's optimism. According to research firm iSuppli, the Asia Pacific semiconductor market, excluding Japan, is expected to grow from US\$88 billion this year to US\$133 billion in 2009. In the area of programmable logic, the market is set to grow from \$762 million in 2005 to US\$1.1 billion in 2009.

"We appreciate Xilinx's investment as it sends a strong signal to the global community that Singapore is an attractive location for companies to site their manufacturing activities. As a valuable business partner, Xilinx is certainly a company that Singapore will want to strengthen and deepen our relationship with in the years ahead," said Mr Chan Soo Sen, Minister of State for Education and Trade & Industry, at the groundbreaking ceremony.

"Since our decision in December 2003 to set up our regional headquarters in Singapore, we have enjoyed a positive and rewarding experience working with the local government and the local semiconductor industry. By increasing our commitment to Singapore and the Asia Pacific market, we are reinforcing our industry leadership position and enhancing our ability to meet the high demand for programmable logic solutions across the region," added Mr Stacy Fender, Managing Director of Xilinx Asia-Pacific.

U.S.-BASED CHIPMAKER Xilinx, Inc. has unveiled a US\$40 million boost to its Singapore operations, with plans for a new building to increase its manufacturing capacity here.

Xilinx, a supplier of programmable chips and one of the largest fabless semiconductor companies in the world, first established its regional headquarters (Xilinx Asia-Pacific) in its Singapore facility in February 2004. With 120 employees, its local subsidiary currently provides infrastructure support for the company's 13 offices across Asia with facilities for research and development, product test engineering, logistics and warehousing.

The new 20,000 square metre building, to be located at Changi Business Park, will be completed in mid-2007. It is expected to quadruple the capacity of the company's on-site manufacturing facility and triple its company in-house process development resources. In addition, the new facility can accommodate 500 employees, a significant increase compared to possible in its current leased site.

"Based on our proven track record in Singapore over the past 18 months, we are confident that this new investment will strengthen our company's strategic position for long-term business success in the fastest-growing semiconductor region in the world," said Mr Kris Chellam, Xilinx's Senior Vice-President of Corporate & Enterprise Services.



Guest-of-honour Mr Chan Soo Sen and Xilinx officials at the groundbreaking ceremony

MUCH TO DO ABOUT IP



TecBiz founders Mr Tan Swee Wan and Mr Kelvin Low

WITH REVISIONS TO OUR Copyright Act earlier this year, coupled with the prosecution of some companies and individuals for music and software piracy, intellectual property (IP) protection has undoubtedly become a new focal point for the local business and consumer community.

Following the amendments, it is now a criminal offence for a person or company to use unlicensed or pirated software and fines of up to \$20,000 or a jail term of six months can be meted out to offenders.

According to The Business Software Alliance (BSA), corporate end user piracy remains the major cause of piracy losses in Singapore. However, far than being knowing offenders, most companies may not be aware that some of their practices are in breach of a vendor's licensing agreements. This is when companies need the aid of a software asset management specialist such as Singapore-based TecBiz FRisMan Pte Ltd (TecBiz).

TecBiz co-founders, Mr Tan Swee Wan and Mr Kelvin Low, have between them more than 25 years of experience in computer forensics and digital investigation from their time in the Singapore Police Force's Computer Crime Branch and as managers in global accounting firms.

Computer forensics is a skill that requires more than mere IT expertise. While a system administrator might be able to track e-mails sent and received and ascertain when a PC was used over the network, only a seasoned professional can piece the clues together and determine if there was any illegal activity involved. Their experience in this field and the growing recognition of the growing importance of IP protection prompted them to strike out on their own to form TechBiz.

I AM SAM?

Software Asset Management (SAM) is an area of Corporate and IT Governance. It is the management process by which software requirements are identified, acquired and handled in an organisation.

Mr Low personally prefers the term, 'Software License Management' to 'Software Asset Management'. He feels that the word "asset" gives the impression that the end user owns the software. In reality, the end user has merely purchased the rights to use it, he explained. From a legal point of view, the software is still the property of the developer. And therefore end users have to abide by the formalised terms and conditions regulating its use.

In light of Singapore's firm stand on IP protection, a company without proper SAM practices runs certain risks. Using unauthorised software may result in system malfunctions that could lead to costly downtime for business operations. Conversely, purchasing more licenses than required may result in costly wastage. Without SAM policies, a company also runs the risk of litigation or other forms of legal action being taken against them for IP infringements. Needless to say, the cumulative negative effect would do considerable damage to the firm's reputation.

According to Mr Tan, most firms do not deliberately set out to infringe copyright agreements. The most common situation arises when businesses are not aware of the full terms and conditions stipulated by software vendors and breach them unknowingly. For example, small businesses owners may not be aware that it is illegal to install a piece of original software they bought on multiple PCs in the company.

Due to heightened educational efforts from local authorities and groups like the BSA, more and more companies are becoming aware of the importance of complying with IP requirements. In addition, some local companies also see the need for SAM practices due their business dealings with overseas counterparts. This holds true especially for companies from developed nations such the United States, where compliance reports are becoming increasingly important for fear of possible fallouts due to IP infringement issues.

DEVELOPING THE ADVANCED RESEARCH AND EDUCATION NETWORK IN SINGAPORE

IN EARLY DAYS, the Internet was primarily a research and education network used by the major universities. It was a 'playground' for academics who used it to experiment with network technologies and develop new applications, many of which—like TCP/IP (Transmission Control Protocol/Internet Protocol), e-mail and the World Wide Web — are still being used today.

As the Internet became more commercialised in the mid-90s, the United States recognised the importance of having an advanced research and education network (AREN) to sustain the pace of innovation. Thus, in 1996, Internet2 was born, modeled after the 'old Internet'.

Singapore followed closely after the U.S. and started a national project in 1997 known as the Singapore Advanced Research and Education Network (SingAREN) to ensure that our local research and education (R&E) community is connected to its international counterparts. As a project, SingAREN was initially funded by the then-Telecom Authority of Singapore (now known as IDA) and National Science and Technology Board (currently known as Agency for Science, Technology and Research).

In October 2003, SingAREN was officially registered as a society. It was also restructured as a self-funded organisation supported by the services it provides to its members. Although SingAREN is now an independent society, the Technology Group of IDA continues to play an active role in SingAREN, advocating and championing the development of advanced network applications and technology here. In particular, 2005 has proven to be a particularly fruitful year for SingAREN.

Firstly, SingAREN has successfully upgraded its network infrastructure to a Gigabit Ethernet network between major universities and research institutions worldwide. The international connectivity to Internet2 has also increased to 155mbps. This S\$1.2 million project, known as SingAREN Gigabit Internet Exchange (GIX), ensures that SingAREN has sufficient capacity to handle the increased R&E collaborations with US universities (e.g. Singapore-MIT Alliance) as well as the additional requirements from the National GRID Pilot Platform.

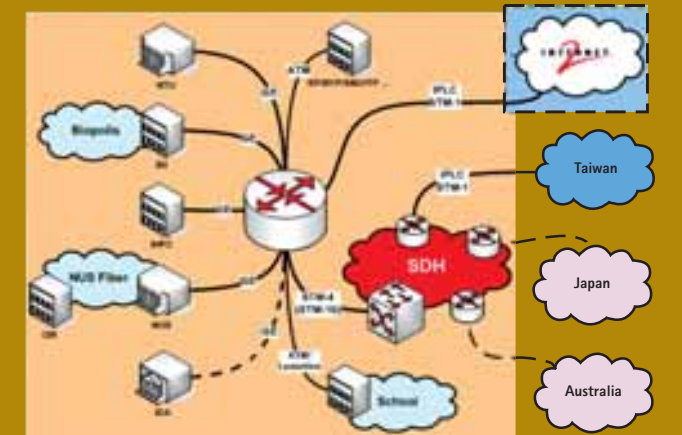
Beside the 155mbps link to US Internet2, SingAREN also gained a 155mbps link to Taiwan Acadeic of Sinica Computer Center (ASCC) and 155mbps connectivity to the Japan Gigabit Network II (JGN2). The latter was established in November and several projects has already been planned, including an e-Learning platform connecting Catholic High School with the schools in Mitaka City and an e-Health project between Singapore National Eye Centre and Asahikawa Medicial College Hospital for 3D high-definition medical communications.

The most significant activity for SingAREN in 2005 is the Trans-Eurasia Information Network (TEIN2)3, a 10m euro (S\$20 million) project largely-

funded by the European Commission. TEIN2's goal is to build R&E connectivity between Europe and Asia Pacific region to benefit developing countries in Asia. Although Singapore was not one of the named benefactors, SingAREN participated in the project representing the Singapore R&E community. Working together with industry and IDA, SingAREN successfully anchored Singapore as one of the three central core for the TEIN2 network in Asia Pacific, serving Malaysia (45mbps), Thailand (155mbps), Indonesia (45mbps), Korea (622mbps) and Australia (622mbps). In addition, the Singapore hub will also have connectivity to Tokyo (622mbps) and Hong Kong (622mbps), as well as providing the primary Europe-Asia connectivity (2.1Gbps).

While these activities did not receive significant media attention, these are important to the R&E community in Singapore, as they provide conduits for Singaporean researchers to do cutting-edge network experimentation while enhancing collaborations among Singaporean and overseas academics. More importantly, these projects have firmly established Singapore as the leader and AREN hub for this region.

*Mr James Seng
Assistant Director (Enabler Technologies)
IDA*



SingAREN's Gigabit Internet Exchange (GIX)