

INSTITUTE OF SYSTEMS SCIENCE, NATIONAL UNIVERSITY OF SINGAPORE

ANNUAL REPORT 2011

Vision

To be recognised globally as a leading institute providing thought leadership in innovation

Mission

Developing Leaders, Driving Innovation

to develop working professionals into interdisciplinary leaders, skilled in systems thinking and innovative practice of IT

Strategies

- ➤ To differentiate ISS through a practice-cum-outcome-based education system to ensure that the programmes are valued by the industry;
- To conduct interdisciplinary applied research that synergises various knowledge domains as foundation for professional education to solve complex issues more effectively;
- ➤ To internationalise ISS programmes, collaborating with local and international partners, sharing our know-how globally and inculcating a global outlook in our students.

Differentiation

- ⇒ Practice-cum-outcome-based education
- ⇒ Academic rigour and teaching quality

Interdisciplinary

Systematic and holistic focus on

- ⇒ Customer
- ⇒Business
- ⇒Process
- ⇒ Information Technology
- ⇒ Management
- ⇒ Leadership

Global Branding

- ⇒ e-Government Leadership Development
- ⇒ Continuing Education for Business-IT Leaders

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Chairman's Statement



The Singapore Infocomm industry revenue reached S\$70.39 billion in 2010, up by 12%¹. As at June 2010, the number of employed Infocomm manpower grew by 0.4% to reach 141,300, with 16,100 unfilled job vacancies². Riding on the thriving industry, ISS courses had an enrolment of 3,800 employees from about 600 organisations in 2011 alone. ISS trained close to 75,000 Infocomm professionals and served 4,300 corporate customers in the last 30 years.

As an Infocomm catalyst, ISS constantly scans the industry for emerging technologies that have the potential to add value to businesses. ISS conducts applied research in these areas to study their business value, designs training courses to equip Infocomm professionals with the competencies, and provides advisory services to corporations to adopt the technologies and realise their benefits. These include technologies such as Cloud Computing, Business Analytics, Service Innovation and Enterprise Social Business.

I am glad that Professor Irene NG has agreed to be ISS Visiting Fellow and an Adjunct Professor for the ISS Service Innovation Cluster. Professor NG is the Professor of Marketing & Service Systems at the Warwick Manufacturing Group of the University of Warwick. Bringing with her years of research and practical experience, Professor NG is a strong boost to ISS' intellectual capital.

I am very delighted that IBM is partnering with ISS to establish a Centre of Excellence in Enterprise Social Business. Enterprise Social Business is the practice of embracing and cultivating a spirit of collaboration and community, both internal and external to the organisation. It shifts the focus from static content and temporary artefacts to PEOPLE, the source of energy, creativity and decision making that moves an organisation forward.

Just as the advent of electronic commerce has changed the brick-and-mortar way of doing business a decade ago, Enterprise Social Business is expected to evolve the landscape for organisations. Through the Centre of Excellence, ISS aims to empower enterprises with the capability and capacity to take the transformational step into social business, while ensuring proper usage of social media by the employees in their workplace.

ISS must continue to foster strong partnership with industry, to stay relevant and provide value to our customers. To ISS' partners that have been giving us a helping hand, I take this opportunity to express our gratitude for your steadfast and continuous support.

Dr Christopher CHIA

Chairman, ISS Management Board

¹ Source: Infocomm Development Authority's Annual Survey on Infocomm Industry for 2010.

² Source: Infocomm Development Authority's Annual Survey on Infocomm Manpower for 2010.



From the CEO



"Moving forward, we must continue to offer a comprehensive education to all Singaporeans, we must be flexible, and we must be open to new ideas. If we can do this, we will prosper and our students will thrive – whatever the future hold," said President Tony TAN Keng Yam, an ISS founding father. "There is no better way to secure the future than to go out and create it," said another founding father, Dr Philip YEO.

Indeed, ISS has achieved several major milestones in the last year. First and foremost, the Singapore Workforce Development Agency (WDA) and the Infocomm Development Authority (IDA) reappointed ISS for another three years as a Continuing Education and Training Centre to offer courses for the National Infocomm Competency Framework. In year 2011, ISS trained 1,789 headcounts and issued 5,097 Workforce Skills Qualifications Statements of Attainment, exceeding the targets set by funding agencies.

As part of our continual effort to refresh the Master of Technology (MTech) programme, ISS has introduced a new basic elective on Knowledge Management and revamped the Mobile Wireless Application Design elective. In addition, ISS has completed a major assessment of the programme for the review by the MTech Overseas Visiting Committee.

While the practice-based education has successfully anchored ISS as a leading training institute, ISS has also established a reputation for applied research and advisory services, coming together to strengthen the ISS Ecosystem. ISS delivers exemplary services to our clients such as Resorts World Sentosa, in core areas of Capability Maturity Model Integration, National Infocomm Competency Framework and Enterprise Architecture.

Last but not least, ISS has made significant headway in our foray into overseas market. Over the last five years, the ISS e-Government Leadership Centre (eGL) has trained about 1,500 public sector leaders from 116 countries. In 2011, the eGL signed Memorandums of Understanding with the Botswana and Panama governments, paving the way for ISS' collaboration with foreign governments.

ISS celebrated our 30th anniversary recently with a big bang. ISS' achievements in the last 30 years could not have happened without the support of our stakeholders. On behalf of the management and staff, I thank the ISS Management Board, NUS, WDA, IDA, customers and partners for their valuable guidance and endorsement. I am confident that ISS will continue to do well in the coming years.

Mr LIM Swee Cheang

Director and Chief Executive Officer



ISS MANAGEMENT BOARD

<u>Dr. Christopher CHIA</u> (Chairman) *Senior Advisor National Trade Union Congress*

<u>Dr. CHONG Yoke Sin</u> Chief Executive Officer Integrated Health Information Systems Pte Ltd



Rosina HOWE-TEO
Group Director, Innovation & InfoComm Technology Group
Land Transport Authority



Teresa LIM
Managing Director
IBM Singapore Pte Ltd



Lynn NG
Director (CET Office), High Education Division
Ministry of Education



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Alphonsus PANG
President, Singapore Computer Society and
Director, Corporate Services

Defence Science & Technology Agency

BG (Ret) PANG Hee Hon Chief Executive Officer Keppel Telecommunications & Transportation Ltd



<u>Jessica TAN</u> Managing Director Microsoft Singapore Pte Ltd

Wilson TAN
Chairman
EZ-Link Pte Ltd











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RADM (NS) Ronnie TAY
Chief Executive Officer
Infocomm Development Authority of Singapore

A/Prof. TEO Hock Hai
Head, Information Systems Department
School of Computing
National University of Singapore



Prof. Lawrence WONG
Deputy Director, Strategic Development
Interactive and Digital Media Institute
National University of Singapore



WU Choy Peng Group Chief Information Officer Neptune Orient Lines Limited



Stavros N YIANNOUKA
Executive Vice Dean
Lee Kuan Yew School of Public Policy
National University of Singapore





Celebrating ISS' 30 Years

On 1 November 2011, ISS celebrated our 30th anniversary.

Established in 1981 as a pioneer in IT training, ISS has grown from strength to strength to now annually train staff in about 600 organisations. ISS has gone beyond the local boundary with students from more than 100 countries.

The Guest-of-Honour at the celebratory dinner was Mr LIM Swee Say, Minister from the Prime Minister's Office. Held at Shangri-La Island Ballroom, the event was attended by over 400 industry captains and ISS' partners, alumni, students and staff. During the dinner, ISS expressed appreciation to our five Founding Fathers and six past and current Chairmen.

As part of the celebration, ISS published the "Bits + Bytes" commemorative book, capturing the evolution of ISS and countless words of wisdom from friends who had journeyed the 30 years with ISS.



Dr Tony TAN Keng Yam, Singapore President

"Since its inception 30 years ago, the Institute of Systems Science has contributed significantly towards nurturing Infocomm talent to support Singapore's exploitation of Infocomm technology for our economic and social development."



Mr LIM Swee Say, Minister, Prime Minister's Office, and former Chairman of ISS Management Board

"As Singapore gears up for the new globalisation, I have every confidence that ISS will continue to transform itself and help reshape the IT landscape of Singapore and beyond for a long time to come."

Professor TAN Chorh Chuan, President, National University of Singapore

"Over the past 30 years, ISS has continually evolved and reinvented itself to remain at the forefront of Singapore's efforts to develop a competitive IT workforce."

Dr Christopher CHIA, Senior Advisor, National Trades Union Congress, Executive Chairman, NTUC Media Co-operative Limited, and Chairman of ISS Management Board

"Looking forward to the next 30 years, ISS will continue to play a catalytic role in preparing the population for the information age, creating a bridge from where we are now to where we will be in the future."

Professor TAN Eng Chye, Deputy President (Academic Affairs) & Provost, Office of the Provost, National University of Singapore

"2011 marks an important milestone for ISS. Established in 1981, ISS would have trained about four generations of IT professionals over the years. This is certainly strong testament of the achievement of ISS in terms of contributing to the growth of the IT profession and industry in the last three decades."





↑ NUS President, The Founding Fathers of ISS and ISS Management posing for a group photograph. (From left) Mr LIM Swee Cheang, ISS Director; Dr Juzar MOTIWALLA, former Director of ISS; Dr Philip IAU, representing his father, the late Mr Robert IAU who was the first Chairman of ISS; Mr Ralph FENECY, representing Mr Ralph EIKENBERRY who was the first Director of ISS; Ms Janet ANG, Managing Director of IBM Singapore; Professor TAN Chorh Chuan, NUS President; Professor LIM Pin, ex-Vice Chancellor of NUS; Dr THIO Hoe Tong, then Director of NUS Computer Centre; and Dr Christopher CHIA, Senior Advisor to National Trades Union Congress, Executive Chairman of NTUC Media Co-operative Limited and Chairman of ISS Management Board.



↑ Past and current ISS Chairmen receiving tokens of appreciation from NUS Provost, Professor TAN Eng Chye (right). (From left) Dr Philip IAU, representing his father, the late Mr Robert IAU who was the first Chairman of ISS; Minister LIM Swee Say; Mr Michael YAP, Deputy CEO of Media Development Authority; and Dr Christopher CHIA.







(ISC)² Affiliate Awards for ISS' Outstanding Performance



ISS was honoured to obtain the prestigious double-award as the Highest Achieving Affiliate (Asia-Pacific) and the Highest Growth Affiliate (Asia-Pacific) of the Year, from the International Information Systems Security Certification Consortium (ISC)². These awards were presented to ISS on 28 September 2011 at the (ISC)² Member Reception Night.

The awards recognised ISS as the top achiever for revenue generation, and the affiliate with the highest year-on-year growth in the Asia-Pacific region. ISS is part of the (ISC)² global affiliate network that trains 7,000 students annually.

International Collaboration with Foreign Governments





On 12 April 2011, the ISS e-Government Leadership Centre (eGL) and Directorate of Public Service Management from Botswana, Africa signed a Memorandum of Understanding (MOU) to mark the beginning of collaboration. Under the agreement, the eGL would assist Botswana Public Service to establish e-Government capacity building programmes, including joint organisation of training and exchange programmes to facilitate know-how transfer and idea generation among public service members in Singapore and Botswana.

This was the first MOU signed by the eGL with a foreign government. It was followed by a second MOU on 19 August 2011, signed with the National Authority for Government Innovation, Republic of Panama. Through these collaborative agreements, ISS embarked on the eGL Institute Building Programme to build self-sufficiency in Information and Communications Technology skills in our partner countries, as they moved towards their vision to harness technology to innovate their public service and administration.



Master Programme

The Master of Technology (MTech) programme was started in 1996. It is offered jointly by ISS, the Department of Electrical & Computer Engineering and the School of Computing at the National University of Singapore (NUS). The programme leads to the award of an NUS Master degree, in either Software Engineering (SE) or Knowledge Engineering (KE).

In addition to the coursework, MTech students are required to work with industry sponsors to develop real-life projects in order to acquire practical hands-on experience:

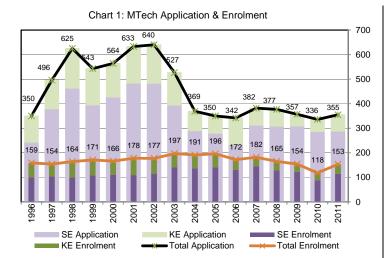
- Keep Youth Alive Management System (KYAMS) was developed by eight MTech (SE) students for Keep Youth Alive Pte Ltd (KYA), a social enterprise dedicated to helping youths-at-risk. KYAMS was a scalable web-based intranet system that allowed KYA to efficiently schedule seminars, optimally manage resources, securely deliver confidential materials and provide current information to the consultants. Not only had the students lent a helping hand for a good cause, they had honed their technical skills and acquired valuable life skills in strategic thinking, self-discipline and teamwork.
- MODERIM was developed by two MTech (KE) students with the objective to secure sensitive business data in this era of smart mobile devices. MODERIM had two operating zones, namely, an Enterprise-Zone for the office environment, and a Public-Zone outside the office. MODERIM would detect the whereabouts of the mobile phone and prescribe different policies for its use, hence controlling the capabilities of the phone depending on its location. Living Analytics Research Centre a joint research initiative between Singapore Management University and Carnegie Mellon University will further develop MODERIM for research on laws of information network evolution.

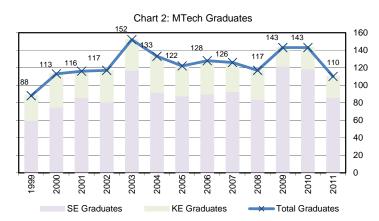
Aligned with the NUS Quality Process for Academic Institutes, ISS has completed a self-assessment to examine trends in the fields of the two MTech programmes, discuss present strengths and problem areas, and evaluate the institute in the context of broader academic objectives. The report will serve as input to the coming MTech Overseas Visiting Committee.

As part of ISS' continuous effort to refresh the MTech curriculum, a new basic elective on Knowledge Management was introduced in the year under review. Another basic elective on Mobile Wireless Application Design was substantially revamped to bring the technology platform up-to-date with the state of the practice.



In 2011, the MTech programme received 355 applications, of which 153 were accepted and enrolled. The high number of applications and enrolments represent respective increase of 6% and 30% compared to the previous year. 64% of the students enrolled in the MTech programme have prior Computer Science qualifications, followed by Engineering that makes up another 28%.





Adding to the pool of 2,000 MTech graduates already working in the industry, another 110 students graduated from the MTech programme in 2011.

"The MTech course had changed me from a technical-minded type of person to better prepare me as an entrepreneur in the future."

Ms Dora CHIIA Heok

Ms Dora CHUA Heok Hoon, 2011 MTech (SE) top student

"I chose the MTech course for the intriguing yet highly applicable menu of modules." Mr Stephen Kurniawan KRISTANTO, 2011 MTech (KE) top student



Graduate Diploma Programme

The Graduate Diploma in Systems Analysis (GDipSA) programme was initiated in 1981. It is designed as a conversion programme to turn individuals with a non-IT background into IT professionals.

GDipSA students go through five months of classroom training, one month of working in teams on large-scale projects, and five months of internship at Infocomm organisations:

- Mr AUNG Khaing Oo was a business administration graduate working in logistics administration and computer maintenance prior to his enrolment in GDipSA. Nonetheless, when he interned at Bilcare Technologies, he was given the challenging task to use cloud computing to design an anti-counterfeiting technology to be used across multiple mobile platforms. Khaing Oo demonstrated his initiative when he developed a modularised solution where the user interface and business logic were decoupled, thus isolating changes to each module and reducing maintenance efforts. Khaing Oo was named the IBM and Accenture prize winner of his class.
- Mr DONG Xiaoguang and Ms ZHANG Shanshan interned at the Agency for Science, Technology and Research (A*STAR) to create an Android application and a Facebook module to stream and share videos. Their project was exhibited in the world's largest consumer technology tradeshow, the International Consumer Electronics Show in Las Vegas in January 2011. "I always look forward to working with ISS interns because I like to impart knowledge and they are eager to absorb knowledge. So it is always an enriching experience working with ISS interns," noted Dr THAM Jo Yew, a research scientist at A*STAR.

Starting from August 2011, ISS took the extra steps to conduct team building activities, to familiarise the GDipSA students with the new environment and foster teamwork among them.

In 2011, the GDipSA programme received 250 applications, of which 117 students enrolled. Two batches of students graduated – 65 in April and 72 in September – making up a total of 137 graduates. They joined the 2,000 students who had graduated from the GDipSA programme since it was rolled out.



Chart 3: GDipSA Recruitment Trends (SA28 to SA34)

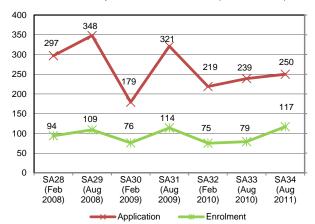
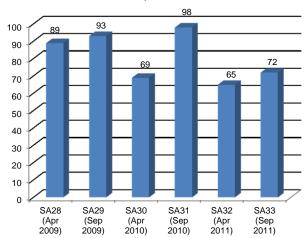


Chart 4: GDipSA Graduates



"I feel a sense of satisfaction whenever I write a programme and it works. I'm actually creating something at work... I look forward to the day when I would be as successful in the IT industry as I was in my previous career."

Ms Teresa SIAH Ghee Qim, SA33 top student and ISS Book Prize winner

"I am enjoying my job very much because I am learning something new every day. Right now, for instance, Accenture is training me on creating portals. Where before I felt I was getting nowhere professionally, now I burn with ambition and am filled with hope about my future."

Ms NWE Mon Htoo, SA33 top student, IBM Gold Medal and Book Prize winner

On 23 September 2011, the SA33 graduates had the most joyous moment at their commencement.





Professional Education

Practice-based professional education is ISS' key differentiating factor. ISS continuously improves the curriculum, course content and training methodologies, to raise the course effectiveness and degree of practice for the customers.

ISS offers a comprehensive suite of 50 continuing education and training courses for the upgrading of Infocomm professionals, managers and user executives. In 2011, more than 3,500 employees of about 400 organisations attended ISS professional education courses. In total, about 71,000 Infocomm professionals and 4,300 corporate customers from over 100 countries have attended our courses.

Besides standard classroom courses, ISS tailors corporate programmes to the unique needs and challenges of individual organisations, in order to best meet their specific requirements. In 2011, ISS provided customised education and workshop training for the following major corporations, spreading across the government, banking, healthcare, manufacturing, transportation and logistics sectors:

0 4	
Corporation	Training
CATHAY PACIFIC	Business Analysis / Requirements Engineering
	Business Process Re-engineering
	 Object-Oriented Programming Using Java
	Building Enterprise Applications Using Java
DB SCHENKER	ITIL® v3 Foundation in IT Service Management
DSTA Defence Science & Technology Agency	MINDEF IT Management Executive Development Programme
	CMMI [®] Awareness Training
HOUSING & DEVELOPMENT	CMMI [®] Refresher Training
BOARD	CMMI [®] Intermediate Training
UHI5	PMP® for Project Managers
	ITIL® v3 Foundation in IT Service Management
NANYANG	ITIL® Capability: Operational Support & Analysis
UNIVERSITY	ITIL® Capability: Release, Control & Validation
	Singapore: ITIL® v3 Foundation in IT Service Management
OCBC Bank	Malaysia: Certification in IT Project Management Preparatory
	Course & Exam
SINGAPORE	Service Innovation Dynamics
SONY	Project Management for Information Systems customised for
make.believe	infrastructure projects
_syngenta.	Foundation of Service Workshop
 UOB 大華銀行	PMP for Project Managers

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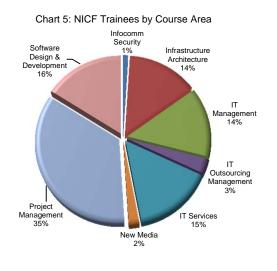


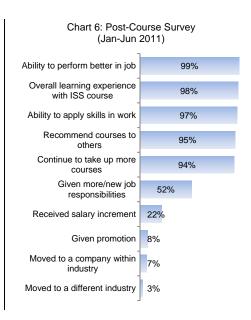
National Infocomm Competency Framework (NICF) Accreditation

ISS was reappointed by the Singapore Workforce Development Agency (WDA) and the Infocomm Development Authority (IDA) as a Continuing Education and Training Centre from January 2011 to December 2013, to offer Workforce Skills Qualifications courses aligned to the National Infocomm Competency Framework (NICF). Participants are awarded a Statement of Attainment (SOA) upon successful completion of the course.

ISS currently offers 35 NICF-accredited courses, in the areas of project management, software design and development, IT services and others. In year 2011, ISS trained 1,789 headcounts and issued 5,097 SOAs, exceeding targets set by funding agencies.

According to the Post-Course Surveys which ISS regularly conducts with the trainees to monitor the satisfaction level and training effectiveness of the NICF courses, 98% of our trainees indicated positive overall learning experience with ISS courses. 95% would recommend the courses to others and 94% would continue to take up more ISS courses. 99% of our trainees experienced improved ability to perform better in their job. 97% were able to apply the skills they had acquired in their work. 52% were given more or new job responsibilities after they attended the ISS courses. 22% received salary increment and 8% were given a promotion.





ISS actively markets the NICF courses. Every month, ISS disseminates promotional materials to partners, customers and participants, as well as to member databases of Project Management Institute Singapore Chapter (SPMI), Singapore Computer Society, and Singapore Manufacturers' Federation. In November 2011, ISS participated at the SPMI Regional Symposium attended by 850 project managers and IT professionals.



For the unemployed trainees attending the NICF courses, ISS puts aside resources to provide career advisory to assist them in seeking employment. For example, the personalised one-on-one career coaching hones their interview skills and identifies jobs more suited to their strengths and experience. ISS also leverages on various career services promotion channels, including job placement in the ISS Career Management Portal as well as participation in career fairs.

"After attending the 1-1 Career Coaching organised by ISS, I was able to focus on my strengths and the skill sets that I have gained over the years when writing my resume and during job interviews. I highly recommend this session to anyone."

Ms Fely MARTINEZ, Senior Business Analyst, Marsh Singapore

"Just wanted to provide an update that I obtained a first job offer last week and thereafter started as a lead business analyst with a company called Schroders this week. I wanted to personally thank you for coordinating the career service; the takeaway from Ms. Heng's session was a key turning point towards my job search as an unemployed returnee from overseas. Do continue this effective outreach and do not hesitate to reach out to me for anything as well."

Mr LOH Kah Loong, Lead Business Analyst, Schroders

"The AISP Qualified Information Security Professional Course provided me with good insights into IT security as well as realistic IT risk issues facing us globally. I know first-hand that the examination is of a high standard, and thus have great confidence in hiring IT risk staff who have attended this qualification."

Mr BAY Guan Seng, Head (ERM), Ministry of Manpower



Update Seminars

ISS offers a series of short seminars for busy Infocomm professionals and business executives to keep abreast with the rapid advances in technology:

Singapore Government 2.0 Camp (19 January 2011) – Jointly organised by ISS, NUS Lee Kuan Yew School of Public Policy and Microsoft, this camp was attended by representatives from the government, industry, media and new media, and civil society. The participants shared their views on the role of Government 2.0 to communicate, collaborate and co-create government citizen services, as well as to improve and expand citizen engagement and empowerment.

Project Management in the 21st Century (21 January 2011) – This panel discussion shared valuable insights into the evolution of IT Project Management and Outsourcing Management. Ms TANG Wai Yee (Inland Revenue Authority of Singapore) spoke about the qualities of an effective project manager; Ms LIM Bee Kwan (IDA) told the stories behind the Singapore Youth Olympic Games; and Mr YAP Chee Yuen (Resorts World Sentosa) divulged his secrets for leadership in difficult projects.

Beyond IT Project Management: Advanced IT Management Best Practices (25 January 2011) – Conducted in collaboration with Lucid IT, this seminar covered the full IT management lifecycle from 'Strategise', 'Build', 'Run' to 'Monitor'. Mr Hans SCHIPHOF and Mr Harold PETERSEN (Lucid IT), Mr Peter FOWLER (Turner & Townsend), Ms Samantha COX (ANZ Bank), and Mr GOH Boon Nam (ISS) shared their best practices and experiences.

Open Data Initiative and e-Government: Architecting Connection, Collaboration and Coherency (28 January 2011) – Countries around the world faced pressure to share government information. In this seminar, Dr Terry F. BUSS, Executive Director and Distinguished Professor of Public Policy at the Heinz College, Carnegie Mellon University, in Adelaide, Australia, discussed the challenges, successes and future of Open Data Initiative in the government.

Business Intelligence: Valuable Insights! (27 May 2011) – Today, customer data take centre stage during the formation of new business strategies. Mr Shanmuga SUNTHAR (SAS), Ms Edwina HUN (SPSS), Dr Kenneth ONG (Kenoir Embedded Systems Centre), and Mr Richard TAN (ISS) shared the trends and pitfalls in applying Business Intelligence.

Leadership Seminar and Master Class: Value Co-Creation in Our Interconnected World (30 September, 3 & 4 October 2011) – Service Innovation expert, Professor Irene NG, outlined the challenges of an interconnected world where value is constantly redefined and re-evaluated. Mr LIM Swee Cheang (ISS) chaired a panel discussion with Mr CHAK Kong Soon (Stream Global), Dr Jason YAP (Agency for Integrated Care), Mr James KANG (IDA), Ms Rosina HOWE-TEO (Land Transport Authority), and Ms Gloria NG (ISS) on the use of Service Innovation to build long term capabilities in organisations.

Did You Shanzhai Today? (7 October 2011) – Shanzhai proponents find ways to make mainstream products cheaper, becoming truly innovative with their product offerings. Dr Virginia CHA (ISS) presented her latest research findings and offered insights into the opportunities enabled by the Shanzhai ecosystem for technology entrepreneurs and established companies.



e-Government Leadership Centre

The e-Government Leadership Centre (eGL) ended its 5th Year from 1 August 2010 to 31 July 2011 with high accomplishment.

Together with the Ministry of Foreign Affairs, the eGL implemented several major education programmes:

- Chief Information Officer (CIO) Training Programme on Strategic Planning & Management of IT;
- Developing e-Government Strategies;
- Effective Information and Communications Technology (ICT)
 Management: Masterplan to Solution;
- Effective Management of ICT Projects;
- Use of IT in Public Administration.

The eGL's active channel development effort gained a lot of traction:

- International Enterprise Singapore provided the eGL leads to Zambia, Panama, Ghana and Bangladesh, as well as to World Bank and Temasek Foundation;
- Civil Service College International linked ISS to Botswana and Vietnam, and engaged the eGL as an instructor;
- Singapore Cooperation Enterprise acted as the lead for a Rwanda project.





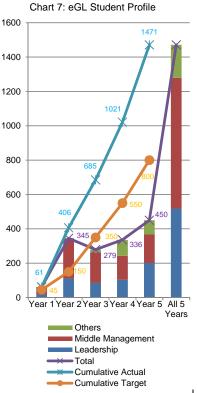
Some countries requested the eGL to share its experiences in Business Process Re-engineering (BPR). The eGL partnered with the Commonwealth Secretariat to organise a BPR workshop in Cayman Islands; with Civil Service College Singapore in Botswana; and another similar workshop in Zambia. On Singapore e-Government programmes and best practices, the eGL presented at the Botswana e-Government Stakeholder Conference and the Qatar QITCOM 2011 Conference & Exhibition.

The eGL facilitated the formation of the International Development Interest Group (IDIG) under the Network of Public Service Training Institutions (PSTI) in October 2011. PSTI is chaired by Civil Service College with members from the training academies of Singapore government agencies. The IDIG aims to bring together like-minded PSTI members to join hands in entering the overseas public sector training market.



The eGL helped to promote the local Infocomm industry. The eGL brought international delegates to local IT enterprises such as CrimsonLogic, Ecquaria Technologies, Elixir Technology, NCS, novaCITYNETS and ST Electronics (Info-Comm Systems) to showcase their expertise and create business leads. The eGL held the first joint event with the Singapore Infocomm Technology Federation in June 2011, to introduce senior government officials from 21 countries to the local Infocomm enterprises.

The eGL participants were mainly government leaders, coming from 116 countries. With an accumulative 1,471 participants over the last 5 years, the eGL far exceeded the target of 800.



"The course has provided us a platform to share best practices, challenges and discuss the possible solution in a generic way where it can be applicable to every nation. Most importantly, the Singapore's experience has alerted and made us prepared."

Ministry of Foreign Affairs' Effective ICT

Management: Masterplan to Solution in Singapore, Participant from Bhutan

"This workshop helped me understand how a project is structured and the importance of having leadership on board at the time a project is initiated. The exercises were excellent as they helped reinforce the material I had just learnt. The exercises also helped me appreciate challenges inherent in brainstorming."

Business Process Re-engineering workshop in Zambia for Ministry of Commerce, Trade and Industry

"I found the entire programme useful as it taught me how to be the change I want other people to be." Introduction to Business Process Reengineering training in Botswana for Directorate of Public Service Management



Advisory Services

Advisory services form one of the three pillars of the ISS Ecosystem, together with practice-based education and applied research. ISS provides advisory services on project design and implementation, as well as conducts on-the-job coaching, certification and appraisal services.

ISS' key service areas include:

- Capability Maturity Model Integration (CMMI) Appraisal and Consulting ISS conducts a CMMI readiness review with the client to identify its process and competency gaps, provides training and advisory to close the gaps, and follows through with a CMMI appraisal;
- National Infocomm Competency Framework (NICF) Development ISS identifies the relevant job roles, defines competency maps, develops staff recruitment templates, analyses training needs, and customises courses for the client to align its training with the competency framework;
- Enterprise Architecture (EA) ISS provides mentoring and advisory support in architecture organisation, governance, metrics, competency management, process, assets and artefacts. ISS also conducts evangelisation sessions to develop business case and initiate EA within the organisation.

Client	Advisory Service
HOUSING & PhillipCapital Your Partner In Finance NIXDORF	CMMI Appraisal and Consulting
CHANGI ROOM WORLD	NICF Development
Majjis Ugama Islam Singapura alam, Binguo Consid a Imagene	Enterprise Architecture
SISTIC	Cloud Computing Proposal Evaluation
SYNERGY MARINE GROUP Total Ship Management Services	Arbitration Support Services

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The ISS team has been delivering exemplary services to our clients.

"Resorts World Sentosa (RWS) has engaged ISS for a consultancy project in adopting and implementing the IDA/WDA's NICF framework. The ISS project team has done an excellent job in managing RWS' requirements and timeline throughout this 15-month project, providing the knowledge and project leadership to complete the project with the overall objectives met."

Mr YAP Chee Yuen, Senior VP/CIO, RWS

"We approached NUS-ISS to provide us with a gauge of our organisational processes and practices through a Standard CMMI Appraisal Method for Process Improvement (SCAMPI) assessment. At the end of the 4-month consultancy period from September to December 2011, the consultants were able to provide very useful findings that enable us to independently develop, improve and institutionalise our processes and practices for a Class A appraisal. The excellent results are also proving valuable in our engagement with business partners." Mr. CHIAM Toon Tong, CIO, Phillip Securities Pte Ltd

"NUS-ISS was engaged between May and September 2011 to conduct the Standard CMMI Appraisal Method for Process Improvement for HDB. This consultancy affirmed HDB-ISG's continual strive for quality based on CMMI a model that ties all the quality system and processes together, to enable HDB to deliver excellent services to our customers. NUS-ISS consultants were very proactive in rendering assistance to the HDB team and have also provided insights for future improvement. The strong and professional relationship built through this process has enabled the team to achieve all the objectives we had set out to meet."

Mr. LEONG Chin Yew, Group Director, Information Services Group, **Housing and Development Board**



Applied Research

ISS welcomes Professor Irene NG to ISS' team of Visiting Fellows, as an Adjunct Professor for the Service Innovation Cluster. Professor NG is the Professor of Marketing & Service Systems at the Warwick Manufacturing Group of the University of Warwick. She is one of the six UK government-appointed Service Fellows at the Advanced Institute of Management, Cambridge, while serving as Fellow at Wolfson College, University of Cambridge. Professor NG was formerly the CEO of the SA Tours and Travel Group of Companies.



ISS Visiting Fellows also include:

- Professor Bo EDVARDSSON, Professor of Business Administration and Director of the Service Research Center at the University of Karlstad, Sweden. Professor EDVARDSSON has been a Visiting Professor for ISS since 2008;
- Professor Sharon DAWES, Founding Director and Senior Fellow at the Center for Technology in Government, and Professor Emerita of Public Administration and Policy and Informatics at the University at Albany, State University of New York. Professor DAWES has been a Courtesy Visiting Fellow for the eGL since 2009.



ISS' key research disciplines are in the following four areas:

- Service Innovation in recognition that we live in a world of service systems where the enterprise and customer co-create and co-determine the value of any product or service;
- II. Technology Entrepreneurship with two tracks decision making under uncertainty and new forms of innovation in emerging markets, specifically Shanzhai, a fast experimentation coupled with a vibrant ecosystem to produce innovative products, especially in the mobile phone industry;
- III. Enterprise Architecture to investigate its impact on public sector transformation and evolution of government functioning;
- IV. e-Government including Public Service Innovation, Green IT Policy, Citizen Participation, and Y-Generation's Perception of e-Government and Policies.



In 2011, ISS embarked on a number of internal innovation projects – ISS adopted the Harvard Business School's case teaching methods in the pursuit for teaching excellence; organised internal research workshops for the teaching staff; and completed a summary report to track ISS research work for the past four years.

Cumulatively, ISS has published more than 40 papers and case reports. The 2011's publications are as follows:

- Research paper "Does Service Dominant Design Result in a Better Service System" published in *Journal of Service Management* (April 2011);
- 2. Conference paper "How is Service-Dominant Design Superior to Goods-Dominant Design" accepted by *International Joint Conference on Service Sciences*, Taiwan (May 2011);
- Case report "Process Change in the Building and Construction Authority" presented at QITCOM 2011 Conference, Qatar (May 2011);
- 4. Research paper "How Service Systems Enable and Direct Co-Creation of Value: A Case of Energy Efficiency Co-Creation" presented at *Naples Forum on Service*, Italy (June 2011);
- 5. Symposium paper "A Study of Mobile Apps to Establish Constructs of Co-Creation as Premised by SDL: Insights to Design Service Systems" accepted by *International Research Symposium on Service Excellence in Management* (June 2011);
- 6. Two teaching case studies "Did You Shanzhai Today? The Cathedral and Bazaar in China" and "Shanzhai Behind Kingdee and Huawei" (June 2011) developed and presented at NUS Executive MBA Programme, Singapore Management University, and INSEAD Research Workshop;
- Conference paper "Towards a Service-Dominant Medical Tourism Service" presented at Frontiers in Service Conference, USA (June 2011);
- 8. Research paper "Factors Influencing Patients' Willingness to Participate in Medical Tourism" presented at 2nd International Research Symposium in Service Management, Indonesia (July 2011);
- 9. Teaching case "Decision Making in Creating the World's First Smartphone" published in *Emerald Group's Emerging Markets Case Studies Collection* (December 2011);
- 10. Research Report "Architecting for Business Insight and Strategic Foresight" published by the United Nation (2011);
- 11. Report for "Understanding the Role of Enterprise Architecture in Attaining Connected Government" completed. Report identifies the levers that positively influence the various dimensions of connected government, and the role of enterprise architecture in achieving connected government.



Speaking Engagement

ISS is often invited to share research findings on a broad range of topics, including Cloud Computing, e-Government, Enterprise Architecture, Service Innovation, Social Media and Technology Entrepreneurship. In 2011, ISS presented at over 20 international and local conferences and forums:

Conference	Topic	Speaker
Enterprise Architecture Research Seminar, Singapore (28 January 2011)	Status of Enterprise Architecture Research	Dr Pallab SAHA
International Joint Conference on Service Sciences, Taiwan (25-27 May 2011)	How is Service-Dominant Design Superior to Goods- Dominant Design?	Mr CHOO Zhi Min
24 th Chief Information Officer Workshop, Hong Kong (26 May 2011)	Enabling the Next Wave of Business Transformation: Utilising Cloud Computing	Dr LEONG Mun Kew
12 th International Research Symposium on Service Excellence in Management, USA (3 June 2011)	Value Co-creation: A Study on the Use of Mobile Apps	Ms Gloria NG
National Innovation Competitiveness and Inclusion – Impact of ICT Workshop, India (7-10 June 2011)	Connect, Collaborate and Co- innovate: Whole of Government Enterprise Architecture with Strategic Thinking	Dr Pallab SAHA
12 th International Conference on Software Reuse, Korea (13-17 June 2011)	Contextual Decision for Effective Transformation in Model-driven Development	Mr HENG Boon Kui
Naples Forum on Service, Italy (14-17 June 2011)	How Service System Enable and Direct Co-creation of Value: A Case of Energy Efficiency Co- creation	Dr GUO Lei
New England Complex Systems Institute Seminar, USA (21 June 2011)	Understanding Growth of Terrorist Groups on Social Media	Ms Gloria NG
New England Complex Systems Institute Seminar, USA (24 June 2011)	Changing Topography of Terrorist Networks	Ms Gloria NG
Frontiers in Service Conference, USA (30 June-3 July 2011)	Towards a Service-Dominant Medical Tourism System	Dr GUO Lei
Infocomm Professional Development Forum, Singapore (7 July 2011)	Building Next Generation Infocomm Professionals	Mr LIM Swee Cheang
Infocomm Professional Development Forum, Singapore (7 July 2011)	IT Business Continuity Management	Mr Alan CHOO
Ideation and Innovations in E- Government and E-Health, Malaysia (27 July 2011)	Advancing E-Government with Enterprise Architecture	Dr Pallab SAHA



Cantarana	Tonia	Chaokan
Conference	Topic	Speaker
The 2 nd International Research	Factors Influencing Patients'	Ms Saisudha
Symposium in Service	Willingness to Participate in	RAJAGOPAL
Management, Indonesia (27-30	Medical Tourism	
July 2011)		M D: I
Preparing for the Next Decade	Breaking through the Country	Mr Richard
of Customer Interaction,	Specific Challenges in IT	TAN
Singapore (28 July 2011)	Adoption and Consumer	
IDM One of Olevel October	Markets in Singapore & APAC	D. LEONO
IBM Smart Cloud Camp,	A Dose of Reality: The	Dr LEONG
Singapore (1 September 2011)	Customer's Perspective on the	Mun Kew
OI: (D + O#; T	Cloud	D LEONO
Chief Data Officer Talk,	Co-Creation: It's Not Just the	Dr LEONG
Singapore (16 September 2011)	Data	Mun Kew
Government of Nepal High	Connected Government as the	Dr Pallab
Level Commission for	New Normal: Practices and	SAHA
Information Technology, Nepal	Innovations in Singapore and	
(18 September 2011)	Beyond	D D 1
2 nd Annual Regional	Threats, Risks and Protection	Dr Derek
Collaboration in Cyber Security		KIONG
Conference, Thailand (27-28		
September 2011)		5 5 11 1
The Open Group Conference	Connected Government as the	Dr Pallab
2011, Taiwan (24-25 October	New Normal: Architecting for	SAHA
2011)	Strategic Foresight	D I FONO
Government Cloud Forum,	A Dose of Reality: The	Dr LEONG
Hong Kong (8-9 November	Customer Perspective on the	Mun Kew
2011)	Cloud	D. Dallah
e-Asia 2011, Bangladesh (1-3	Enterprise Architecture for	Dr Pallab
December 2011)	Government Leaders	SAHA
International Conference on	The Y Generation: Outbound	Dr Virginia
Teaching and Learning in	Communication Methods	CHA
Higher Education, Singapore (6-		
9 December 2011)		

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Corporate Partnership

Corporate partnership is part of ISS' future-proof growth strategy, for ISS to continually improve on our service offerings to cater for the development of the Infocomm industry. ISS has many successes collaborating with global companies and educational institutions to deliver quality education and international certification programmes.

goodagile>

ISS collaborates with GoodAgile's founder Mr Paul C Pete DEEMER to deliver the Certified ScrumMaster course. Mr DEEMER, an authorised trainer by Scrum Alliance, is a founder of the Scrum Training Institute and the lead author of The Scrum Primer.



International Information Systems Security Certification Consortium (ISC)^{2®} is the global leader in educating and certifying information security professionals. (ISC)^{2®} has appointed ISS to deliver Certified Information Systems Security Professional ("CISSP®") and Certified Secure Lifecycle Professional ("CSSLP®") Review Seminars and examinations in Singapore.



ISS partners with Lucid IT, a leading Australian IT service management consultancy company, to jointly offer training and advisory services for organisations adopting COBIT®, ITIL®, PRINCE2® and P3O®. Lucid IT provides ISS with instructors, as well as accredited training material and real-life implementation scenarios.



National Defense University Information Resources Management College (USA) and ISS have been jointly delivering the IT Management Executive Development Programme for MINDEF since 2009, to equip MINDEF Corporate IT community with the competencies to exploit IT for business benefits.

ISS also partners with local professional associations and societies to promote national certifications.



Association of Information Security Professionals (AISP) has appointed ISS to develop and conduct the AISP Qualified Information Security Professional course and examination. AISP and ISS jointly organise seminars under the Technology Security Series to keep IT professionals abreast of the latest development in information security.



IT Management Association and ISS have been co-organising the annual IT Best Practices Seminar since 2007. The most recent seminar was themed "The CIO Business – The Art & Science of being an IT Leader", conducted on 1 November 2011 at the Singapore Marriott Hotel.



Singapore Computer Society has appointed ISS to conduct Certification in IT Project Management Preparatory Course (since 1999), Certification in IT Outsourcing Management Preparatory Course (since 2006) and Certification in IT Business Continuity Management Preparatory Course (since 2010). Beyond providing the training, ISS also administers the qualifying examinations.



Alumni

The ISS Alumni Advisory Council, chaired by Mr Alphonsus PANG, met quarterly to discuss issues and provide guidance to ISS on our efforts to reconnect with the alumni. Some of the ISS alumni are now entrepreneurs, CEOs, CIOs, CTOs, and leaders in their various fields.

For the first time, ISS conferred the ISS Distinguished Alumni Achievement Award. Selected from a pool of 4,000 MTech and GDipSA graduates, the winners were recognised for their significant accomplishments in business or professional life, or for distinguished service to their community or nation, as exemplary role models to inspire other ISS students.



Mr James KANG, Assistant Chief Executive (Government Chief Information Office), Infocomm Development Authority – In his role as ACE (GCIO), Singapore has been awarded No. 1 e-government ranking by Waseda University 3 years in a row and No. 2 out of 138 countries by World Economic Forum in 2011. Mr KANG is a member of World Bank's High Level Expert Group to advise other countries on e-government implementation. Mr KANG won the CIO Asia Award in 2004.



Mr LIM Teck Sin, Chief Executive Officer, KOOPrime Pte Ltd – In addition to founding KOOPrime, Mr LIM has set up a joint venture with Eu Yan Sang International on food safety; a Hong Kong based research centre with Hewlett Packard on genomics; and a company with A*STAR on medication tracking. Mr LIM won the Best Entrepreneur (Science & SOC) of the NUS Centennial Entrepreneurship Awards in 2005.



Ms NGIAN Lek Choh, Deputy Chief Executive Officer, National Library Board – Under the stewardship of Ms NGIAN, NLB is globally acknowledged as a trailblazer in the provision of lifestyle and state-of-the-art library services. When NLB embarked on the computerisation of its operations in 1983, Ms NGIAN was the first in NLB to enrol in ISS Systems Analysis programme.



Mr Alphonsus PANG, Director, Corporate Services, Defence Science & Technology Agency – Mr PANG was the elected President and Fellow of the Singapore Computer Society in 2009, having served on its executive council since 1997. Mr PANG steered the creation of the NSmen's portal, now called NS.sg, which garnered the 3rd Annual Intelligent20 Awards 2002/3 and the CIO 100 Honouree for CIO Awards 2003.



Ms POH Mui Hoon, Group Chief Executive Officer, Webvisions Pte Ltd – Ms POH spearheads Webvisions' pan-Asian expansion across Asia Pacific. Ms POH is the Founder and Partner of Saffron Seeds, working with corporations and start-ups on go-to-market strategies in the technology, electronic payment and digital media space. Ms POH was the former Group CEO for NETS to implement nationwide electronic payment system. She was on the International Advisory Council for China Union Pay.



Management & Staff

Sen	ior Management		
1.	LIM Swee Cheang	Director / CEO	
2.	YUM Hui Yuen	Deputy Director	
3.	LEONG Mun Kew	Deputy Director	
4.	Leonard NEE	Deputy Director & Chief, Graduate Programme	
Chie	Chiefs (Practice)		
5.	Swarnalatha ASHOK	Advanced Technology Applications Practice	
6.	Daniel BOEY	Project Management Practice	
7.	Virginia CHA	Research Practice	
8.	GOH Boon Nam	New Initiatives & Strategic Planning	
9.	David Robert	Software Engineering Programme	
	HUFTON		
10.	LOONG Chay Ching	Teaching Excellence Practice	
11.	Gloria NG	Service Innovation Practice	
12.		Knowledge Engineering Programme	
13.	Esther TAN	Systems Analysis Programme	
14.	Joseph TEO	Director, Singapore e-Government Leadership	
		Centre	
Dire	Directors (Support Unit)		
15.	Theresa Veronica CHAN	Associate Director, Business Development	
16.	Shirley SING	Senior Associate Director, Operations	
17.	TAN Bee Leng	Associate Director, Finance	
18.	Richard TAN	Chief Information Officer	
19.	Eric YUM	Associate Director, Marketing Communications	

ISS teaching and consulting members are industry practitioners with an average of 20 years of working experience in research, development, consultancy and management. ISS maintains an international and multi-disciplinary team comprising 46 full-time teaching and consulting members and 42 support staff. Eleven were recruited as part of the rejuvenation process to inject fresh perspectives.

More than half of ISS teaching staff members possess Masters educational qualification, and another quarter have PhDs. In 2011, Dr Virginia CHA, ISS Research Practice Chief, became our "PhD newbie" when she was conferred her Doctorate in Innovation from the NUS Faculty of Engineering. Dr CHA's thesis was titled "Is Effectuation Really Enough? An Examination on the Relationship of Logic, Experience, and Innovativeness in Entrepreneurial Decision Making."

Reflecting on her PhD journey, Dr CHA has the following advice for other PhD candidates: (a) find your true intellectual interest, (b) know the subject well, (c) look for gaps in existing theories, and (d) execute the research process with rigour. She shared that, as a "senior", she had difficulty separating science from age-old industry experience amassed over three decades. As a part-



timer, she struggled to juggle all the commitments, and found it really useful to align her day-job duties with the PhD research. She also emphasised the importance to immerse in the research environment, and to view the socialisation process with the research supervisor and other PhD candidates as an important building block in this journey.

Six ISS staff are currently pursuing doctorate in various subjects:

Ms Suria R ASAI National University of Singapore, Variability Management and Traceability for Software Product Line Testing

Mr HENG Boon Kui National University of Singapore, Model-Driven Development

Ms Esther TAN Nanyang Technological University, Mobile context awareness Ms FAN Zhenzhen Nanyang Technological University, Computational Linguistics

Mr OUH Eng Lieh National University of Singapore, Variability management in software-as-aservice models

Mr Joseph TEO University of Western Australia, e-Government

ISS staff members continually upgrade their skills through research and advisory projects, as well as professional certifications. In 2011, 39 ISS staff acquired or renewed industry certifications in ISS' areas of specialisation. ISS has a network of 40 adjuncts from academia, industry and government organisations. They augment ISS' intellectual capital with their diverse experience.



Annex A: Governance

ISS believes in the importance of good governance. ISS establishes stringent corporate governance and reporting structure with clear responsibility and accountability. As an integral part of NUS, ISS operates within the framework of NUS governance. ISS applies the standard university-wide policies, guidelines and rules to achieve academic rigour, first-rate performance and optimal day-to-day operation.

Stewardship and oversight of ISS are tightly controlled. The ISS CEO is appointed by the NUS Provost and reports to him on operational matters. The ISS Management Board provides strategic guidance to ISS senior management. The Board Chairman is appointed by the NUS President, and the Board members are in turn appointed by the Chairman. The terms of reference for the appointment are as follows:

- To advise ISS on strategic business direction;
- To review ISS programmes and products to ensure they meet the changing needs of the industry and help ISS establish strategies to remain innovative with a leading edge;
- To advise ISS on appropriate organisational and personnel policies to support its mission and strategy;
- To assist in establishing links with the industry and other leading institutions.

ISS is ISO 9001:2008 certified for training and consulting services, as further assurance of our commitment to educational and learning excellence. Hence, ISS delivers high calibre value that exceeds the stringent requirements of our customers.