

School of Information Systems 


Industry Collaborations with the SMU (Singapore)

School of Information Systems: Experiences, Lessons and Suggestions

08 December 2006
Prepared for
MIS Research Center
Carlson School of Business
University of Minnesota

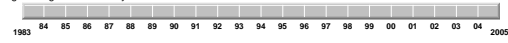
Agenda

1. My background
2. Singapore and SMU
3. The School of Information Systems (SIS)
4. SIS staffing model and personnel
5. Case studies of SIS industry collaboration
 - Integrated with Experiences, Lessons, Suggestions
 - i. **The SIS Board of Advisors**
 - ii. **The undergraduate programme**
 - iii. **The Standard Chartered Bank [iLAB@SMU](#)**
 - iv. **others**
6. Q & A



My background: IT applications researcher & educator → user & designer → provider → researcher & educator

Ph.D, 1983
Carnegie Mellon
Engineering & Public Policy




Carnegie Mellon Univ. * Assist. Prof - Pittsburgh, PA USA	Fujitsu Ltd Telecom (& FNC) * Dir. Of Mfg. Eng. - Oyama, Japan - Richardson, TX, USA	RWD Technologies * Chief Eng. - Columbia, MD, USA	IBM Global Services e-Biz architect, consulting - Sgp., - ASEAN, - AP	SMU School of Info Systems Founding Dean - Singapore
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SINGAPORE- East-West Fusion of Trade and People: Asian (Chinese, Malay, Indian) Eur-asian, Cauc-asian






The "little red dot" One Degree North of the Equator

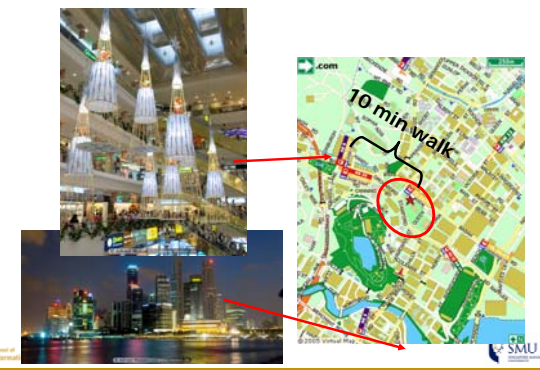



- Flight Times:
 - Hong Kong 3 hours
 - Bangkok 2 hours
 - Bali 2 hours
 - Kuala Lumpur 1 hour

We live here. It's always warm and toasty! 😊



SMU is located in the heart of the city





Design Images of the New SMU City Campus from 2002- 2004

School of Information Systems

SMU

The Real Thing : SMU City Campus opened in July 2006

School of Information Systems

SMU

The School of Information Systems Building

School of Information Systems

SMU

School of Information Systems

SMU

Singapore MANAGEMENT University (SMU) The School of Information Systems is SMU's fourth school

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graph TD
    SMU[SMU] --- SB[School of Business (2000)]
    SMU --- SA[School of Accountancy (2001)]
    SMU --- SES[School of Economics & Social Science (2002)]
    SMU --- SIS[School of Information Systems (2003)]
    SB --- LS[Law School (2007)]
  
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School of Information Systems

SMU

Position SIS as "Business IT"
 * Deep technology that can impact business processes
 * Management analysis that can guide possibilities for IT enabled transformation

Science or Engineering based Media & Arts based Sector or industry vertical based Business & industry based Social science or public policy based

Newer "IT + X" dept/school

Established Computer Science Dept/School

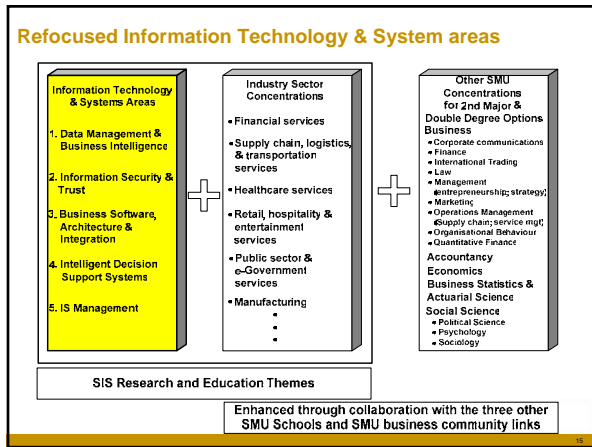
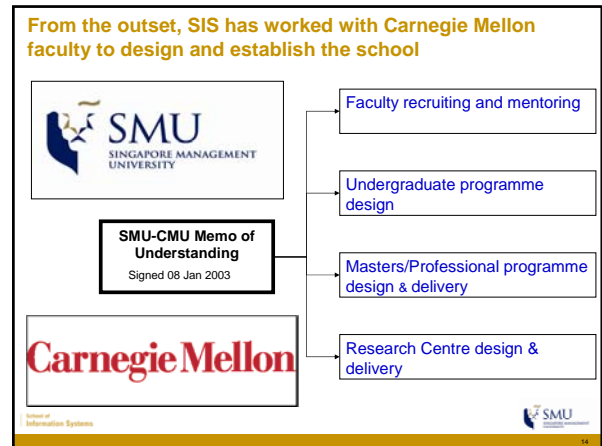
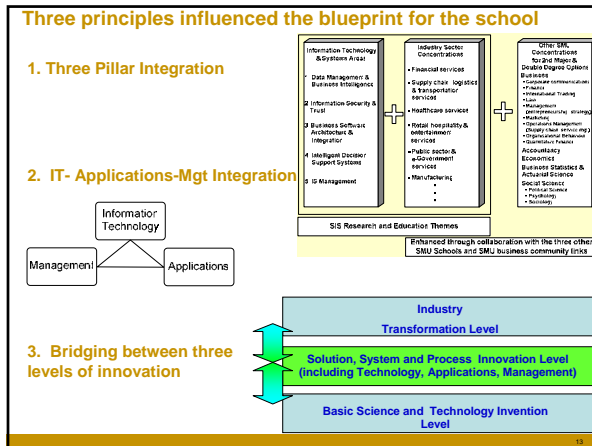
Established Business School Information Systems Group/Dept.

1. Organized around "classic computer science" sub-disciplines.
2. Heavily oriented towards scientific and engineering applications of computing.
3. Heavily oriented to creating new and/or fundamental methods, tools, building blocks and demonstrations (accompanied by publications).
4. The resulting methods and technologies often migrate into Business IT. But Business IT per say is not the core interests of most researchers and educators.

1. Organized around "classic business school" sub-disciplines.
2. Heavily oriented towards social science, management & management science analysis methods and questions.
3. Heavily oriented to creating new and/or fundamental analysis results for publication (per #2).
4. Most of the research community has moved away from the design or development of actual software or solutions. Researchers and educators are focused on various types of impact analysis, and on optimal resource allocation analysis.

School of Information Systems

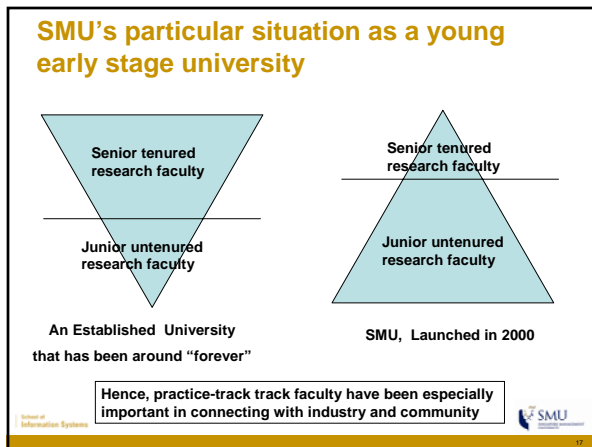
SMU



SMU & SIS Staffing Model

Main Categories	Main sub-categories	Main job types
Faculty	Core Faculty	Tenure-track Practice-track
	Support faculty	Lecturer, Sr. Lecturer
Staff	Teaching support	Instructors
	Research support	Research support staff
	Admin & Operations	Office admin Functional staff

Bold: Instrumental for the SIS interactions with industry

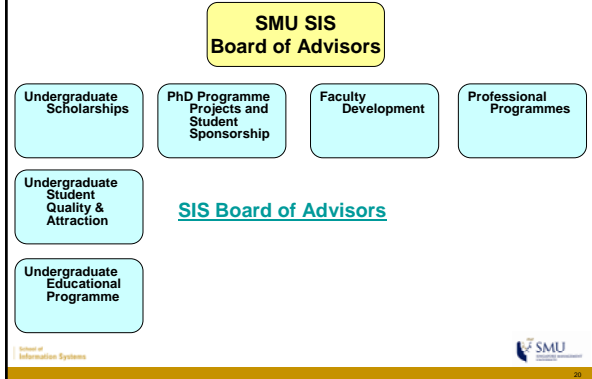


Case studies of SIS industry collaboration: Already going

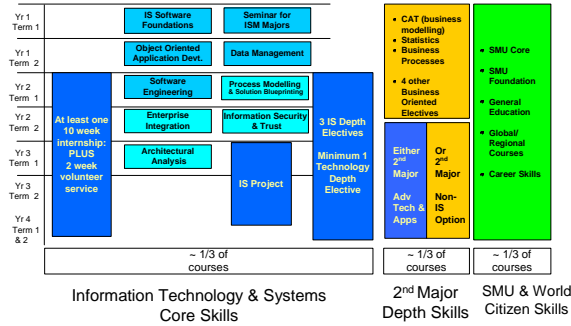
1. The SIS Board of Advisors
2. The undergraduate programme
3. The Standard Chartered Bank [iLAB@SMU](#)
4. The former IBM Business Consulting Services Solution Center at SMU
5. The Singapore National Grid Effort, and the related Adaptive Enterprise @ Singapore programme (a collaboration across the Singapore government, universities and HP labs)
6. Joint efforts with SAP to increase tertiary student exposure to current and future generations of SAP's enterprise solutions
7. Joint efforts with Oracle to mount a certification programme for the Architecture of Business Grids
8. The SIS PhD programme



SIS Board of Advisors Working Groups



The complete BSc (ISM) curriculum. Info systems core, 2nd major, and SMU core/foundation courses are taken in parallel to build the required skill mix



Industry collaboration in the undergraduate curriculum, Internships and Projects

Core Courses	Industry partner	Interesting interaction
Business-IT Internship	* Multiple companies	<ul style="list-style-type: none"> • Student internship assignments • Must be in the SIS "space" of Business IT • Often multiple internships
IS Application Project	* Multiple companies	<ul style="list-style-type: none"> • Student prep, project execution, feedback • Industry-track: <ul style="list-style-type: none"> - Students MUST have something to DEMO • Research Track

Large and rich networks of industry relationships are needed for

- interesting Business IT internships and projects
- to place students
- to attract students




For Hwee Teng, School of Information Systems

Bloomberg LP

Yo Hwee Teng

SMU

REUTERS

Department Profile: Asia Security, Reuters

Amr Sagar

Reuters

Amr Sagar

BIM (OM), [SC] (SM)

Period: June-July 2006

Graduation: May 2007

The Asia Security Team

SMU

REUTERS

LOW WEI LING YEAR 2003

Low Wei Ling

Reuters

Low Wei Ling

SMU

ING

Shirley Low

Learning to look from a managerial perspective.

ING

SMU

SMU

Summer Internship Times

LEHMAN BROTHERS

Memorable Experience with an International Investment Bank

Lehman Brothers

Tan Choon Kiat

SMU

INTERNSHIP @ BOSSARD

Electronic First Article (eFA)

Linking Different Departments in a Business Process

Bossard e-Shop

Bossard, YAP Sin Gek

SMU

SMU
Singapore Management University

Internship for the Academic Year 2005 / 2006

Company: Exploit Technologies Pte Ltd (ETPL), A*STAR

Brief Description of Work Done:
During my 10-week internship stint, I completed a series of technology and market intelligence analysis projects pertaining to the following informatics technology portfolios:

- Speech Analytics
- Data mining for Financial Services Applications
- Architecture Solutions
- Business Intelligence Solutions

For several of these projects, I was also required to present my results to A*STAR research teams and participate in discussions relating to technology applications.

What I gained out of the internship?

- Developing Technology Intelligence / Competitive Intelligence (CI) Analysis for commercialization of technologies
- Presentation skills
- Project management skills
- Personal skills and knowledge gained from attending talks, internal and external meetings
- Networking skills

Magdalene Ho
School of Information Systems
Year 1

Exploit Technologies Pte Ltd, A*Star
Magdalene Ho

This is where I want to be

"People often ask me how I spent my summers during my stay at SMU. My reply to them is that I was having fun at some of the coolest places in the world. Besides the usual plunges of real life projects to partying with wonderful set of colleagues, I did it all during my last three summers"
Rohit Goyal, Year 4 Student of Information Systems, Second Major in Finance

My Summer Mergeweets

Accenture	JP Morgan	DBS
I was involved with Accenture's first meeting with Citigroup's Treasury and Risk Management. I was the only SMU student to be invited to the meeting. I was also involved with Citigroup's first meeting with JP Morgan's Treasury and Risk Management. I was the only SMU student to be invited to the meeting. I was also involved with Citigroup's first meeting with JP Morgan's Treasury and Risk Management. I was the only SMU student to be invited to the meeting.		
Key Takeaways: - Project Organization - Time Organization - Working with clients on real life	Key Takeaways: - Project Organization - Coping with working hours needs - Delivering what's best for the client	Key Takeaways: - Project Organization - Project Organization

Accenture
JP Morgan
DBS
Rohit Goyal

Yahoo!

Teo Poh Guat Joanna

avanade
/systems. solutions. success./from Accenture & Microsoft

My Role: Application designer and developer of a project for a major broadcasting company

My Tools: To create design documents, build a module and implement unit tests

The System: Built on .NET platform with C#

Learning Outcomes

- Appreciate the need for learning-to-learn skills as supervision is minimal in a real world project and work is never routine
- Gained first-hand experience of Accenture's best practices in project management
- Enhanced technical understanding of how a big and complex system works
- Value the importance of good documentation to make the system fathomable to all stakeholders

Beetsma Zeki Zamily
School of Information Systems
Class of 2004

Avanade - Beetsma Zeki Zamily

Internship at NCS

As a student in the Information Systems (IS) program at SMU, you will engage in a 10-week internship with a leading industry partner. This is a unique opportunity for you to gain practical experience in a real-world work environment. The internship will provide you with a chance to apply your classroom knowledge to a real-world project. You will also have the opportunity to network with industry professionals and gain valuable insights into the industry.

The Industry Partners

SMU
NCS

Feng Shihue Adrian

Industry collaboration in the undergraduate curriculum, core courses

Core Courses	Industry partner	Interesting interaction
Computer as Analysis Tool (CAT)	• Multiple companies	• Student projects building spreadsheet based business models
Seminar for ISM Majors	• Executives from multiple companies	• Required Business-IT talks linked to the course • Other Business-IT talks
Information Security & Trust	E-cop (winner of Singapore National Infocomm awards, 2005)	• Interactions with students in class • Follow on internships • Best student award
Architecture Analysis	Atos Origin (IT Service company for Olympics) Mercury Interactive (Test & mgt tools)	• Beijing Olympics "real" case study for course project • First installation and use of web-based "Performance Center" for load testing
Requirements Modelling and Solution Blueprinting	Infosys NTUC Income	• Use of INFLUX tool for requirements modelling • Real case studies • Jointly authored text book • Insurance process improvement "real" case study • Participation in the course

Industry collaboration in the undergraduate curriculum, elective courses

Course	Industry partner	Interesting interaction
Enterprise Information Systems	SAP	<ul style="list-style-type: none"> Joint delivery of a course for 2 years Examples from SAP product specialists and consultants
Financial Services Business IT	OCBC	<ul style="list-style-type: none"> Project on using IT for multi-channel retail banking Experts to critique projects Prizes
	Bloomberg	<ul style="list-style-type: none"> Financial information systems for trading and foreign exchange
Advanced Data Management	Oracle	<ul style="list-style-type: none"> Tooling Examples
Grid Architecture & Applications	Oracle	<ul style="list-style-type: none"> Co-design of joint certification course for professionals Create version for undergrads

School of Information Systems SMU

Standard Chartered iLab@SMU

Standard Chartered

What the iLAB Looks Like:

iLab@SMU is located @ Level 3, School of Info. Systems

iLab@SMU – Ideas to Income

SCB iLab@SMU Creation

Standard Chartered

- May 2005 - SIS briefing to SMU Board of Trustees on school design and activities
- July 2005 – SCB Business Unit Head (on SMU BoT) follows up with SIS
- Aug 2005 – Feb 2006: Drafting of collaboration agreement and negotiation on terms and agreement wording
- March '06 – Legal agreement with SMU is signed
- May 29, '06 – iLab opens doors
- SCB dedicated staff
- SMU focused staff (admin, instructor, Dean, project coordinator)
- Budget for projects (ex-people)
- Processes, including IP Management, are in place

iLab@SMU – Ideas to Income

iLAB Partnership between SCB and SMU

Standard Chartered

- While Lab is in SIS, agreement is university-wide:
 - School of IS
 - LKC School of Business
 - School of Economics & Social Sciences
 - School of Accountancy
 - School of LAW (as of 2007)
- Projects
 - ~20 Projects initiated in 2006 (both business and IT)
 - 5 projects completed
 - ~15 projects in progress (~10 completed by Nov '06)
 - multiple undergrad, 1 PhD and 3 faculty projects in progress
 - ~ 15+ projects in queue (SIS and SESS)
 - ~ 50+ being assessed from SCB

iLab@SMU – Ideas to Income

Standard Chartered iLab@SMU

Standard Chartered

Examples of Current Projects :

IT projects with SIS

- Instant Messenger Call Centre
- Voice Biometric Authentication for Priority Customers
- Digital Signing System for Bank Documents
- Automated Paper Forms Checking using OCR
- MySpace for the Bank – Corporate Collaboration
- Customer Driven Product Configuration System
- eKiosk – Self Service Virtual Teller

Economics projects with SESS

Marketing projects with LKCSB

School of Information Systems SMU

SCB iLab@SMU Benefits for SMU Students and Faculty

Standard Chartered

- Real exposure to corporate banking environment and challenges
- In-depth interactions with SCB experts in business & technology
- Projects are ambitious in complexity, scope, innovative content
- Access to real data
- Encourages opportunities and provides resources to explore and build innovation → target to do more in the "RADICAL SQUARE"!
- Complimentary project streams from faculty
- Learn about using, creating and managing Intellectual Property

iLab@SMU – Ideas to Income

How the Standard Chartered iLAB@SMU impacts the spectrum of SMU efforts

Standard Chartered Bank

SCB iLAB@SMU

- School of Info Systems: Ugrad * projects, internships
- LKCC School of Business: PhD * projects
- School of Econ & Social Sci: Faculty * projects
- School of Accountancy: SIS's external university linkages
- School of Law: * e.g. Carnegie Mellon, Zhejiang

- Each unit of SMU is learning how to work with the iLAB
- The bank is learning how to work with the iLAB
- Learning = trial, error, and adjustment...

Example of learning: early operating experience with student projects led to amendments to the legal agreement

- Agreement was crafted on basis of funded projects, endowments and research grants, internships
- Relevant changes to agreement made to cater for advisors to undergraduate course projects like IS480 in SIS and Senior Thesis in SESS
 - Removal of IP assignment T&Cs in Confidentiality and IP Assignment document;
 - Exception of non-compete clause in Main agreement;
 - Retention of project media and materials
 - SMU - select media and materials
 - SCB on site server for 4 years – all media and materials

SCB's Operational Requirements & Challenges for iLAB

- **Strong and visible sr. team leadership**
 - Focus on Innovation strategy & innovation portfolio mix
- **Embed Innovation into "business as usual"**
 - Drive and support cultural change
 - Calculated risk-taking
 - Encourage experimentation and acceptance of "good" failures
 - Obtain / provide air-cover against "organizational antibodies"
 - Design appropriate Innovation metrics
 - Design Innovation-friendly rewards system
- **Manage the "Creativity vs. Value-capture" balance**
 - Ideas-to-Income (I2I) value stream
- **Adopt the Network as the basic unit of Innovation**
 - Innovation networks span people and knowledge outside SCB
 - Open Innovation model
 - Innovation platforms
 - Leverage Innovation Marketplace(s) whenever possible

Strategy for Innovation

Definition of Innovation

- **In the SCB context, innovation is:**
 - **Δ in Business Model and/or Technology**
 - **that is expected to have, directly or indirectly, material financial benefits for SCB**
- **High-impact Innovation is expected to occur at the intersection of Business Models and Technology change**

		Business Model	
		- Value Proposition	- Supply Chain
Technology		Significant Δ	Near Existing
		Radical Innovation	Semi-radical Innovation
Product / Service	Process - Enabling Technology	Near Existing	Incremental Innovation

Innovation Model

Open (versus Closed) Innovation Principles

- **Closed Innovation Principles**
 1. The smart people in our field work for us
 2. To profit from R&D we must discover, develop and ship it ourselves
 3. If we discover it ourselves, we will get to market first
 4. The company that gets an innovation to market first will win
 5. If we create the most and the best ideas in the industry, we will win
 6. We should control our IP, so that our competitors don't profit from our ideas
- **Open Innovation Principles**
 1. Not all smart people work for us. We need to work with smart people *inside and outside* our company
 2. External R&D can create significant value; internal R&D is needed to claim some of that value
 3. We don't have to originate the research to profit from it
 4. Building a better business model is better than getting to market first
 5. If we make the best use of internal and external ideas, we will win
 6. We should profit from others' use of our IP, and we should buy others' IP whenever it advances our business model

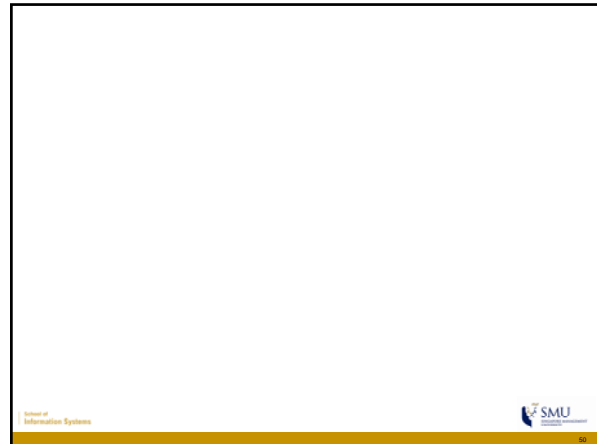
From Chesbrough, "Open Innovation", 2003

Vision for iLab as the center of an Innovation Network

Standard Chartered

- SCB can grow an Innovation Network centered around the iLab
 - iLab's connections can span SCB, government institutions, private sector companies, universities and venture capital

iLab@SMU – Ideas to Income



Case studies of SIS industry collaboration: Already going

- The SIS Board of Advisors
- The undergraduate programme
- The Standard Chartered Bank [iLAB@SMU](#)
- The former IBM Business Consulting Services Solution Center at SMU
- The Singapore National Grid Effort, and the related Adaptive Enterprise @ Singapore programme (a collaboration across the Singapore government, universities and HP labs)
- Joint efforts with SAP to increase tertiary student exposure to current and future generations of SAP's enterprise solutions
- Joint efforts with Oracle to mount a certification programme for the Architecture of Business Grids
- The SIS PhD programme

SMU

Other SIS industry collaborations

Industry Partner	Joint Initiative	Status
Adaptive Enterprise @ SG (Singapore IDA – HP Labs, related to National Grid)	<ul style="list-style-type: none"> Digital Media Portal project SMU: business models 	<ul style="list-style-type: none"> Phase 1 completing Phase 2 discussions
SAP	<ul style="list-style-type: none"> Joint delivery of Enterprise Systems course SAP – SMU tertiary student certification SAP/HP Enterprise Discovery Services Server Joint competency center focusing on end-user view of business process management 	<ul style="list-style-type: none"> Working out details on 2nd, 3rd items. 4th item: under discussion

SMU

Other SIS industry collaborations, con't

Industry Partner	Joint Initiative	Status
Oracle	Enterprise Grid Architect Certification Programme	<ul style="list-style-type: none"> Piloted 1st production run in Feb 07
IBM Business Consulting Services	<ul style="list-style-type: none"> IBM BCS Solution Centre at SMU (2003 – 2005) 	<ul style="list-style-type: none"> Sun-setted Folding into new Enterprise Solution Innovation Lab

SMU

The SIS Ph.D. in Information Systems

Career Prospects

- R&D units
 - Research institutes
 - Corporate R&D
 - Government agencies
- Academic institutions
- Industry
 - Consulting
 - Industry analysts

SMU Scholarships

- Monthly stipend
- Tuition fee waiver

SIS Focus Areas

- Data Mgt & Business Intelligence
- Information Security
- Intelligent Decision Support Systems
- IS management (niche)
- Software systems, architecture

Characteristics

- Inter-disciplinary
- Applied research
- Industry relevance

SMU

Case studies of SIS industry collaboration: New initiatives

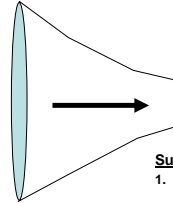
1. Collaboration with the Financial Services Sector to establish a professor masters for technology and operations professionals in the sector
2. New Labs & Centers

The new SIS Professional Masters Programme as of August 2007

Applicant Pool Sources: Working Professionals from

Sector Targets for Job Placements or Career Advancement:

- Banking T&O
- Insurance T&O
- Securities T&O
- Supply Chain T&O
- Retail T&O
- Healthcare T&O
- Manufacturing T&O
- Military T&O



Financial Services T&O (focus of first and early batches)

Subsequent years

1. Expand banking & FSI specific courses
2. Add Supply Chain sector specific courses
3. Add courses for additional sectors

T&O = Technology & Operations

Proposed curriculum: Year 1 Launch

Course areas	Types of Courses	Number of courses
1. General Management	1.1 Accounting for managers 1.2 Corporate Finance 1.3 Business management	3
2. IT & Process Management	2.1 Decision Models for IT Management 2.2 IT Governance & Innovation Management 2.3 IT Project & Vendor Management 2.4 Global Sourcing Management	4
3. Sector Processes & Solutions	1. Banking and financial sector content	4 (concentrated in chosen sector)
4. Project (integrating across areas 1, 2, and 3)	• Integrative capstone project running over 1 year + • Student must demonstrate deep competency in areas 2 and 3. • Done in conjunction with employer or sponsoring company	2

13 courses total

IT & Process Management Courses (offered by SIS)

Course Name	Key topics
2.1. Decision Models for IT Management	<ul style="list-style-type: none"> • Decision model building & analysis with spreadsheets • Analyzing the impacts of uncertainty and risk on decisions • Analyzing trade-offs • Decision models for managing IT & process resources
2.2. IT Governance & Innovation Management	<ul style="list-style-type: none"> • Governance including risk management • IT portfolio & capability management • Innovation methodologies • Intellectual Property vs innovation and governance
2.3. Project & Vendor Management	<ul style="list-style-type: none"> • Project management fundamentals • Managing contracts, service levels and IP ownership • Managing risks of development & delivery • Managing acceptance of project & vendor deliverables
2.4 Global Sourcing Management	<ul style="list-style-type: none"> • Evaluation of sourcing alternatives • Managing distributed development projects • Managing distributed delivery processes • Special managerial issues arising from global sourcing

All of these courses are designed in the context of developing and delivering IT & Process capabilities and services

Process & Solution Courses (offered by SIS)

Sector: Banking and Financial Services	
Course Name	Key Contents
3.1 FSI Products and Processes	<ul style="list-style-type: none"> • Products from an operations & process perspective • Workflows, transactions and approval process • Relationships and linkages across products and processes
3.2 FSI Architecture ¹	<ul style="list-style-type: none"> • Business & Process Architecture • Applications Architecture • Information & Data Architecture • Technology Architecture and Infrastructure (including special real-time infrastructure)
3.3 FSI Software & Technology Solutions	<ul style="list-style-type: none"> • Front office & customer facing solutions • Middle & Back office solutions • Data management, business intelligence & analytics focus • Security, privacy & trust focus • Information Integration focus (both internal, external)
3.4 FSI Trends and Drivers	Impact of emerging technologies and standards (e.g. SOX, Basel 2) on Products & processes, enterprise architecture & enterprise solutions

All of these courses are situated in the context of the banking industry, with selected inclusion of other parts of FS industries as required.

Industry People We Consulted With on Programme Concept & Design

- **Angie Monksfield**, Vice President Application Projects, IT Services, SIA Computer Centre, Singapore Airlines – 14th Sep 2006
- **Sunil Chandra**, ex-CIO, Asia Pacific, Barclay Capital – 20th Sep 2006
- **Robert Yap**, Group CIO & Head of DFS Group's Finance/Shared services and Trading divisions, DFS Group Limited – 22nd Sep 2006, 27th Oct 2006
- **Susan Wee**, Executive VP, IT, United Overseas Bank – 22nd Sep 2006
- **Jan Verplancke**, CIO and Group Head, Technology & Operations, Standard Chartered Bank – 28th Sep 2006
- **Teng Soon Lang**, Executive Vice President, OCBC Bank Group – 2nd Oct 2006
- **Leslie Loh**, System Access – 5th Oct 2006
- **Venky Krishnakumar**, Former Citibank head of T&O, currently with Barclay's Global Retail & Commercial Banking – 5th Oct 2006
- **Steve Ingram**, Former Head of T&O and CIO of DBS, now EDS – 5th Oct 2006
- **Pooja Saxena**, AVP and **Manuel Lopez**, Credit Suisse – 18th Oct 2006
- **Mark Shearer**, General Manager, IBM Systems & Technology Group (i Series) – 27th Oct 2006
- **Nadathur Raghavan**, Co-founder of Infosys and a member of SIS Advisory Board – 31st Oct 2006
- **John Klinck**, Vice Chairman, Mellon Financial Corporation – 6th Nov 2006

Singapore Government People We Consulted With on Programme Concept & Design

- **Tan Hui Khim**, Head, IT, Computing & E-Business, EDB – 18th Sep 2006
- **Harin Grewal, Nanda Kumar Karippur, Tack Chun**, IDA, Manpower Division – 10th Oct 2006
- **Kenneth Kaw**, Monetary Authority of Singapore, Manpower Division, 15 Nov 2006

SIS Research Labs & Centres: Existing, Underway, Desired

A Lab Associated with Each Faculty Cluster

- Data Management & Business Intelligence Lab
- Security & Trust Lab
- Software Systems, Architecture & Integration Lab
- Intelligent Decision Support Lab
- IS Management Lab

Plus

Related labs or centres organized around integrative themes

- Standard Chartered iLAB@SMU (existing)
- Undergraduate Student Lab (existing)
- **Enterprise Solution Innovation Lab (underway)**
- **Financial Services Solutions Lab (desired, for new professional masters programme)**
- **Centre for Advanced Business Intelligence (desired)**
- **Centre for Business Games & Participatory Media (desired, sort of underway)**

Interactive & Digital Media Research at SIS

