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
   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

1983 2005
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04

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

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

The Real Thing: SMU City Campus opened in July 2006
The School of Information Systems Building
Singapore MANAGEMENT University (SMU)
The School of Information Systems is SMU's fourth school

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 interest 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.
Three principles influenced the blueprint for the school

1. Three Pillar Integration

2. IT- Applications-Mgt Integration

3. Bridging between three levels of innovation

From the outset, SIS has worked with Carnegie Mellon faculty to design and establish the school

SMU-CMU Memo of Understanding
Signed 08 Jan 2003

SMU
SINGAPORE MANAGEMENT UNIVERSITY

Carnegie Mellon
Refocused Information Technology & System areas

<table>
<thead>
<tr>
<th>Information Technology &amp; Systems Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Data Management &amp; Business Intelligence</td>
</tr>
<tr>
<td>2. Information Security &amp; Trust</td>
</tr>
<tr>
<td>3. Business Software, Architecture &amp; Integration</td>
</tr>
<tr>
<td>4. Intelligent Decision Support Systems</td>
</tr>
<tr>
<td>5. IS Management</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry Sector Concentrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Financial services</td>
</tr>
<tr>
<td>• Supply chain, logistics, &amp; transportation services</td>
</tr>
<tr>
<td>• Healthcare services</td>
</tr>
<tr>
<td>• Retail, hospitality &amp; entertainment services</td>
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<tr>
<td>• Public sector &amp; e-Government services</td>
</tr>
<tr>
<td>• Manufacturing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other SMU Concentrations for 2nd Major &amp; Double Degree Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
</tr>
<tr>
<td>• Corporate communications</td>
</tr>
<tr>
<td>• Finance</td>
</tr>
<tr>
<td>• International Trading</td>
</tr>
<tr>
<td>• Law</td>
</tr>
<tr>
<td>• Management (entrepreneurship, strategy)</td>
</tr>
<tr>
<td>• Marketing</td>
</tr>
<tr>
<td>• Operations Management (Supply chain service mg)</td>
</tr>
<tr>
<td>• Organisational Behaviour</td>
</tr>
<tr>
<td>• Quantitative Finance</td>
</tr>
<tr>
<td>Economics</td>
</tr>
<tr>
<td>• Political Science</td>
</tr>
<tr>
<td>• Psychology</td>
</tr>
<tr>
<td>• Sociology</td>
</tr>
</tbody>
</table>

SIS Research and Education Themes

Enhanced through collaboration with the three other SMU Schools and SMU business community links

SMU & SIS Staffing Model

<table>
<thead>
<tr>
<th>Main Categories</th>
<th>Main sub-categories</th>
<th>Main job types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>Core Faculty</td>
<td>Tenure-track</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice-track</td>
</tr>
<tr>
<td>Support faculty</td>
<td>Lecturer, Sr. Lecturer</td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td>Teaching support</td>
<td>Instructors</td>
</tr>
<tr>
<td></td>
<td>Research support</td>
<td>Research support staff</td>
</tr>
<tr>
<td></td>
<td>Admin &amp; Operations</td>
<td>Office admin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Functional staff</td>
</tr>
</tbody>
</table>

*Bold: Instrumental for the SIS interactions with industry*
SMU’s particular situation as a young early stage university

Senior tenured research faculty

Junior untenured research faculty

An Established University that has been around “forever”

Senior tenured research faculty

Junior untenured research faculty

SMU, Launched in 2000

Hence, practice-track track faculty have been especially important in connecting with industry and community
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
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.

Information Technology & Systems Core Skills

2nd Major Depth Skills

SMU & World Citizen Skills

Industry collaboration in the undergraduate curriculum, Internships and Projects

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Industry partner</th>
<th>Interesting interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business-IT Internship</td>
<td>* Multiple</td>
<td>• Student internship assignments</td>
</tr>
<tr>
<td></td>
<td>companies</td>
<td>• Must be in the SIS “space” of Business IT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Often multiple internships</td>
</tr>
<tr>
<td>IS Application Project</td>
<td>* Multiple</td>
<td>• Student prep, project execution, feedback</td>
</tr>
<tr>
<td></td>
<td>companies</td>
<td>• Industry-track:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–Students MUST have something to DEMO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Research Track</td>
</tr>
</tbody>
</table>

Large and rich networks of industry relationships are needed for
• interesting Business IT internships and projects
• to place students
• to attract students
Internships Posters

THE BLOOMBERG TIMES

A SPECIAL LIMITED EDITION

STUDENT INTERNSHIP PUBLICATION • NOT FOR SALE

Be Attractive
Get in Shape

Be attractive for the industry,
gain experience from internship.

The summer break is over, students are back to
school now, again, which is bad. But can be
looking forward to your internship at Bloomberg.

Bloomberg being a global leading provider of
data, news and analytics emphasizes on deliver-
ing fast and up-to-date data with excellent
customer service support and stays on the
frontline of the technology edge. She revealed to
us what she had learned there.

"It was truly a rewarding experience. I played
part in exciting projects, communicating
and working with colleagues from other offices
in Asia Pacific region. Lining up with product
vendors and understanding technologies that is
beneficial to end user that aids in enhancing
the business flow, improving efficiency and
productivity of employees. Had gained valua-
able insights into what system management
tasks a company will require in future. IT
operations."

And that's not all! She had good opportunities
in doing job shadowing across various depart-
ments to further understand the job functions
and business roles of the firm. The culture
and environment requires each individual to be
discipline, proactive and Bloomberg treat
teenagers seriously just like their own stuff as
they are seen as future potential employee of
the organization.

At the end of internship, she had certainly
improved her ability with visually impactful
presentation of her research which had set the
standard. She is a future professional to watch
out for in the field of technology.

When asked what is her biggest takeaway, it
was certainly how this internship has helped in
her development as a professional and learning
through observation on how the IT
management works. This internship expereince
had definitely shaped her to be more
attractive for the industry in future.

Wen Tan Li Hui, 3rd yr ESM student of
Bloomberg dividing her career path as a IT
professional

Bloomberg. TAN Li Hui

School of
Information Systems
School of Information Systems
Lehman Brothers
Tom Choon Kiat

INTERNSHIP @ BOSSARD

Electronic First Article (eFA)

A first article is raised by the Quality Assurance Department when:
- The Sales Department has to determine the specifications of the part (e.g. size, screws, warning) from the customer.
- The Purchasing Department needs to verify if the component from the supplier meets the required specifications.
- The QA Department needs to automate the test and report process.
- Instead of testing all the eFAs, a sample of the eFA is selected to perform thorough quality checks.
- The 5th sample from the lot of eFAs is selected for thorough inspection and testing.
- The eFA sample is made and tested for quality.

Linking Different Departments in a Business Process

Sales Dept
- Bossard strategy is designed to offer multifunctional, cost-effective solutions.
- Technical advice to help reduce overall costs.
- Details

Quality Assurance Dept
- Technical advice to help reduce costs.
- Details

Purchasing Dept
- Technical advice to help reduce costs.
- Details

Bossard eShop
- Select Shop...
- Details

Lehman Brothers
Tom Choon Kiat

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Purchasing Dept
- Technical advice to help reduce costs.
- Details

Bossard eShop
- Select Shop...
- Details
## Internship for the Academic Year 2005/2006

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

**Brief Description of Work Done:**
During my six-month internship stint, I completed a series of technology and market intelligence analysis projects pertaining to the following domains:

- Speech Analytics
- Data Mining for Financial Services Applications
- Anti-Money Laundering 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:**
- Deepening Technology intelligence / Competitive Intelligence (CTIC) Analysis for commercialization of technologies
- Presentation skills
- Practical management skills
- Personal skills and knowledge gained from seminars, internal and external networking
- Networking skills

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**This is where I want to be**

"People often ask me how I spent my summer 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 plagues of real-life projects to partying with the wonderful set of colleagues, I did it all during my last three summers."

- **Rohit Goyal,** Year 4, School of Information Systems, Second Major in Finance

### My Summer Handsouts

<table>
<thead>
<tr>
<th>Company</th>
<th>Key Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accenture</strong></td>
<td>I was involved with Accenture Global Passed a major milestone in the development phase of the project, leading to the successful deployment of the final product.</td>
</tr>
<tr>
<td><strong>JP Morgan</strong></td>
<td>I worked with a high-performing team on a project to integrate the existing system with new market data. We were responsible for all aspects of the project, from design to implementation.</td>
</tr>
<tr>
<td><strong>DBS</strong></td>
<td>I worked closely with the project team to manage risks and optimize project outcomes.</td>
</tr>
</tbody>
</table>

**Key Talents:**
- Project Management
- Team Organisation
- Business matching needs

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**Exploit Technologies Pte Ltd, A*STAR**

Magdalene Ho

School of Information Systems

Vor 6
Industry collaboration in the undergraduate curriculum, core courses

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Industry partner</th>
<th>Interesting interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer as Analysis Tool (CAT)</td>
<td>Multiple companies</td>
<td>• Student projects building spreadsheet based business models</td>
</tr>
<tr>
<td>Seminar for ISM Majors</td>
<td>Executives from multiple companies</td>
<td>• Required Business-IT talks linked to the course</td>
</tr>
<tr>
<td>Information Security &amp; Trust</td>
<td>E-cop (winner of Singapore National Infocomm awards, 2005)</td>
<td>• Interactions with students in class</td>
</tr>
<tr>
<td>Architecture Analysis</td>
<td>Atos Origin (IT Service company for Olympics)</td>
<td>• Follow on internships</td>
</tr>
<tr>
<td></td>
<td>Mercury Interactive (Test &amp; mgt tools)</td>
<td>• Beijing Olympics “real” case study for course project</td>
</tr>
<tr>
<td>Requirements Modelling and Solution Blueprinting</td>
<td>Infosys</td>
<td>• Use of INFLUX tool for requirements modelling, real case studies, jointly authored text book</td>
</tr>
<tr>
<td></td>
<td>NTUC Income</td>
<td>• Insurance process improvement “real” case study, participation in the course</td>
</tr>
</tbody>
</table>
## Industry collaboration in the undergraduate curriculum, elective courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Industry partner</th>
<th>Interesting interaction</th>
</tr>
</thead>
</table>
| Enterprise Information Systems            | SAP              | • Joint delivery of a course for 2 years  
• Examples from SAP product specialists and consultants |
| Financial Services Business IT            | OCBC             | • Project on using IT for multi-channel retail banking  
• Experts to critique projects  
• Prizes |
| Financial Services Business IT            | Bloomberg        | • Financial information systems for trading and foreign exchange |
| Advanced Data Management                   | Oracle           | • Tooling  
• Examples |
| Grid Architecture & Applications          | Oracle           | • Co-design of joint certification course for professionals  
• Create version for undergrads |

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**Standard Chartered iLab@SMU**

**What the iLAB Looks Like:**

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

- 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

- While Lab is in SIS, agreement is university-wide:
  1. School of IS
  2. LKC School of Business
  3. School of Economics & Social Sciences
  4. School of Accountancy
  5. 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
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**

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**SCB iLab@SMU Benefits for SMU Students and Faculty**

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

<table>
<thead>
<tr>
<th>School of Info Systems</th>
<th>Ugrad * projects, internships</th>
</tr>
</thead>
<tbody>
<tr>
<td>LKC</td>
<td>PhD * projects</td>
</tr>
<tr>
<td>School of Business</td>
<td>Faculty * projects</td>
</tr>
<tr>
<td>School of Econ &amp; Social Sci</td>
<td>SIS's external university linkages * e.g. Carnegie Mellon, Zhejiang</td>
</tr>
<tr>
<td>School of Accountancy</td>
<td></td>
</tr>
<tr>
<td>School of Law</td>
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</table>

- 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

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**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

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**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

  From Chesbrough, “Open Innovation”, 2003

- **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
Vision for iLab as the center of an Innovation Network

- 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
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

Other SIS industry collaborations

<table>
<thead>
<tr>
<th>Industry Partner</th>
<th>Joint Initiative</th>
<th>Status</th>
</tr>
</thead>
</table>
| Adaptive Enterprise @ SG (Singapore IDA – HP Labs, related to National Grid) | • Digital Media Portal project  
• SMU: business models | • Phase 1 completing  
• Phase 2 discussions |
| SAP | • 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 | Working out details on 2nd, 3rd items.  
4th item: under discussion |
Other SIS industry collaborations, con’t

<table>
<thead>
<tr>
<th>Industry Partner</th>
<th>Joint Initiative</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>Enterprise Grid Architect Certification Programme</td>
<td>• Piloted • 1st production run in Feb 07</td>
</tr>
<tr>
<td>IBM Business Consulting Services</td>
<td>• IBM BCS Solution Centre at SMU (2003 – 2005)</td>
<td>• Sun-setted • Folding into new Enterprise Solution Innovation Lab</td>
</tr>
</tbody>
</table>

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

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

**SMU Scholarships**
- Monthly stipend
- Tuition fee waiver

**Characteristics**
- Inter-disciplinary
- Applied research
- Industry relevance
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

- 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

T&O = Technology & Operations

Sector Targets for Job Placements or Career Advancement:

- 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
Proposed curriculum: Year 1 Launch

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

13 courses total

IT & Process Management Courses
(offered by SIS)

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Key topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1. Decision Models for IT Management</td>
<td>• Decision model building &amp; analysis with spreadsheets</td>
</tr>
<tr>
<td></td>
<td>• Analyzing the impacts of uncertainty and risk on decisions</td>
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<td></td>
<td>• Analyzing trade-offs</td>
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<td></td>
<td>• Decision models for managing IT &amp; process resources</td>
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<tr>
<td>2.2. IT Governance &amp; Innovation Management</td>
<td>• Governance including risk management</td>
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<td></td>
<td>• IT portfolio &amp; capability management</td>
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<td></td>
<td>• Innovation methodologies</td>
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<tr>
<td></td>
<td>• Intellectual Property vs innovation and governance</td>
</tr>
<tr>
<td>2.3. Project &amp; Vendor Management</td>
<td>• Project management fundamentals</td>
</tr>
<tr>
<td></td>
<td>• Managing contracts, service levels and IP ownership</td>
</tr>
<tr>
<td></td>
<td>• Managing risks of development &amp; delivery</td>
</tr>
<tr>
<td></td>
<td>• Managing acceptance of project &amp; vendor deliverables</td>
</tr>
<tr>
<td>2.4 Global Sourcing Management</td>
<td>• Evaluation of sourcing alternatives</td>
</tr>
<tr>
<td></td>
<td>• Managing distributed development projects</td>
</tr>
<tr>
<td></td>
<td>• Managing distributed delivery processes</td>
</tr>
<tr>
<td></td>
<td>• Special managerial issues arising from global sourcing</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Key Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 FSI Products and Processes</td>
<td>• Products from an operations &amp; process perspective</td>
</tr>
<tr>
<td></td>
<td>• Workflows, transactions and approval process</td>
</tr>
<tr>
<td></td>
<td>• Relationships and linkages across products and processes</td>
</tr>
<tr>
<td>3.2 FSI Architecture¹</td>
<td>• Business &amp; Process Architecture</td>
</tr>
<tr>
<td></td>
<td>• Applications Architecture</td>
</tr>
<tr>
<td></td>
<td>• Information &amp; Data Architecture</td>
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<tr>
<td></td>
<td>• Technology Architecture and Infrastructure (including special real-time infrastructure)</td>
</tr>
<tr>
<td>3.3 FSI Software &amp; Technology Solutions</td>
<td>• Front office &amp; customer facing solutions</td>
</tr>
<tr>
<td></td>
<td>• Middle &amp; Back office solutions</td>
</tr>
<tr>
<td></td>
<td>• Data management, business intelligence &amp; analytics focus</td>
</tr>
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<td></td>
<td>• Security, privacy &amp; trust focus</td>
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<tr>
<td></td>
<td>• Information Integration focus (both internal, external)</td>
</tr>
<tr>
<td>3.4 FSI Trends and Drivers</td>
<td>Impact of emerging technologies and standards (e.g. SOX, Basel 2) on Products &amp; processes, enterprise architecture &amp; enterprise solutions</td>
</tr>
</tbody>
</table>

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
- Susan Wee, Executive VP, IT, United Overseas Bank – 22nd Sep 2006
- Teng Soon Lang, Executive Vice President, OCBC Bank Group – 2nd 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
- 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

**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

SMU Centre for Business Games and Participatory Media

Business Games Lab
• Infrastructure development
• Research and teaching tools

Participatory Media Lab
• Peer production methods
• User studies and experiments

SIG IDM

IDM exploratory workshop