

Presentation on
NUS Enterprise
- The starting up environment in NUS

HUI Kwok-Leong
Head, Business Incubation



NUS Enterprise
30 Mar 2006

Developing Singapore's Future
Entrepreneurs and Global
Enterprises



Spirit of Enterprise

NUS Enterprise
08 Dec 2006

2

Primary Roles of University

“...the three primary roles which a world-class university should play in a modern economy and society:

- i. delivering quality undergraduate education;
- ii. developing graduate education and research; and
- iii. fostering entrepreneurship and industry involvement.”

*Dr Tony Tan Keng Yam, Deputy Prime Minister And Minister
For Defence, Official Opening Of NUS' Prince George's
Park Residences, 12 August 2002*

Towards an Entrepreneurial University

"NUS aspires to stand among the entrepreneurial universities. This is in line with our vision to become a global knowledge enterprise. We have taken steps to inject an entrepreneurial dimension. We have established NUS Enterprise: A *FREE ENTERPRISE ZONE*, where *innovation and entrepreneurship are freed from traditional rules...*"

*-- Prof Shih Choon Fong,
State of University Address 2002, 13 August 2002*

Mission

“An agent of change, promoting the spirit of innovation & enterprise within the NUS community, and generating value from university resources.”

Through:

- **Experiential Education**
- **Industry Development**
- **Venture Creation**

Enterprise Functions

Experiential Education

- NUS Overseas Colleges

Industry Development

- Intellectual Property Management
- Industry Relations

Entrepreneurship Center

- Outreach
- Research
- NUS Venture Support
- Incubation

Corporate

- NUS Extension
- NUS Press
- NUS Technology Holdings

Enterprise Functions



Experiential Education

- NUS Overseas Colleges

Industry Development

- Intellectual Property Management
- Industry Relations

Entrepreneurship Center

- Outreach
- Research
- NUS Venture Support
- Incubation

Corporate

- NUS Extension
- NUS Press
- NUS Technology Holdings

NUS Enterprise - Education NUS Overseas Colleges



- Immersion in the *entrepreneurial-academic* environment of leading entrepreneurial hubs to develop global outlook
- Students spend *one year as interns in technology startups*, while pursuing entrepreneurship-related courses in partner universities
- 5 overseas colleges in leading entrepreneurial hubs
- 200 students a year to participate in this programme

NUS Overseas Colleges



NUS College in Silicon Valley, USA (2002)

Study at Stanford & work in the innovation "habitat"



NUS College in Bio Valley, USA (2003)

Study at UPenn & work in the US' pharma hotbed



NUS College in Shanghai, China (2004)

Study at Fudan & work in China's commercial hub



NUS College in Stockholm, Europe (2005)

Study at KTH/SSE & work in Europe's No.1 IT hub

NUS College in Bangalore, India (2006)

Study at IISc & work in India's high-tech hub



NUS Overseas Colleges



NOC Students - Achievements

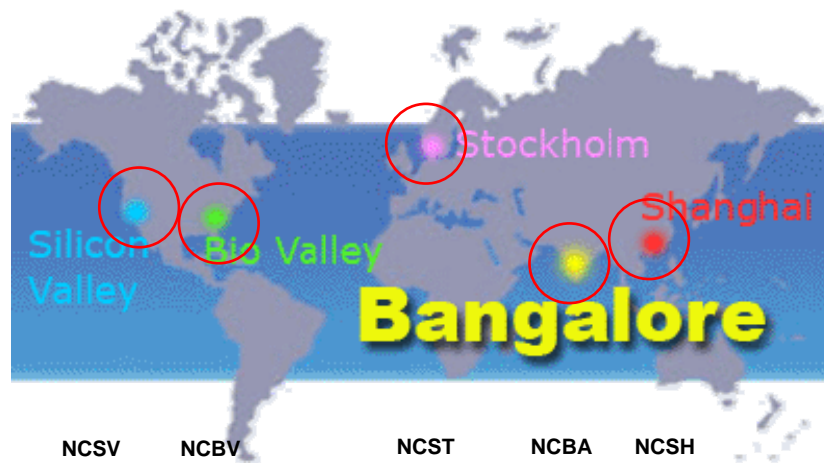
Competition	Award	No. of Entries	No. of Countries	No. of Unl.
2 nd Lee Kuan Yew Global Business Plan Competition 2004, Singapore	1 st , 2 nd & Consolation Prizes	547	35	117
Startup@Singapore 2004, Singapore	1 st , 3 rd & Merit Prizes & 1 st Youth Category	245	-	-
Global Startup@Singapore 2003, Singapore	2 nd Prize	16	10	16
Megabucks Business Plan Competition 2003, Kanpur India	2 nd Prize	120	-	-
Startup@Singapore 2003, Singapore	1 st Prize	218	-	-

NUS Overseas Colleges Alumni Network



- Since its inception in 2002, over 350 students have participated in the NOC programme as interns at over 100 companies in Silicon Valley, Bio Valley, Shanghai and Stockholm
- These companies span the fields of Biotechnology; Infocommunications, Telecommunications & Media; Engineering & Environmental Services; Logistics & Transport Engineering; Healthcare; Chemical and Electronics industries

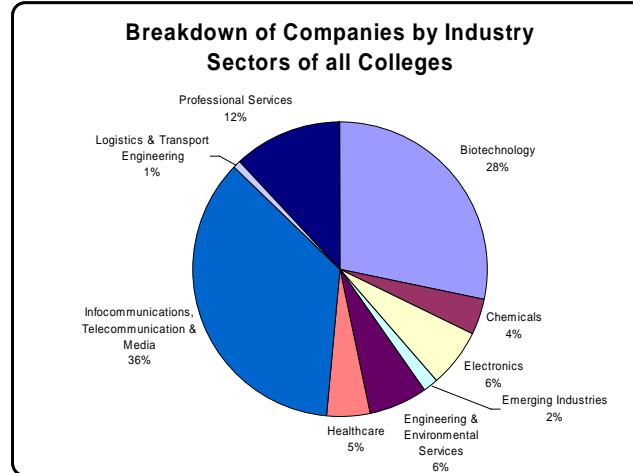
NUS Overseas Colleges Alumni Network



NUS Overseas Colleges



Total Number
Of Companies:
110



the electric new paper

GET IT, READ IT

SEARCH

TOP STORIES

NUS student, 22, takes on US telco giant in \$1b market

REPORTS & PICTURE by Jan Tan
tanjan@nyp.com.sg

QUALCOMM is a Fortune 500 US company that last year recorded a revenue of more than \$5 billion.

World Indigo is a five person company set up by NUS undergraduate Goh Yiping.

They are racing against time, and other competitors, to enter the final handset-free zone.

Imagine standing on a train or riding on your phone while not at sea, on a speeding long-distance train, or even on a plane.

Her big break came when she was selected to go to the US as part of the three-year-old NUS entrepreneurship programme.

As of June this year, 75 NUS students have spent a year at colleges in California's Silicon Valley and Philadelphia's 'Bio Valley'.

Working at Mibou Communications, a firm that does digital television similar to MediaCorp's TV-White, Miss Goh's world was full of the vast possibilities the world offered.

'One thing I feel about some local entrepreneurs is that they often come up with traditional (business) ideas, like setting up retail shops.'

'If I did not get a chance to go overseas, I would have only thought about setting up a local business too.'

Except for fellow Singaporean Tammy Lee, most of the others in her company are years older than Miss Goh.

Said American Carlos Garcia, 37, who runs Niloute and is also World Indigo's chairman: 'Nobody has time to talk about why their boss is so young.'

'When you work for World Indigo, Yiping will put you to work immediately, so the issue never comes up.'

NOC STUDENT TAKES ON US TELCO GIANT IN \$1BILLION MARKET –

Goh Yiping, NCBV student, starts World Indigo, Inc, the first wireless network operator to specialize in providing text messaging (SMS) and e-mail services to passengers' mobile phones onboard ferries, trains and aircrafts worldwide.

Examples of prominent industry collaboration:



- a) Joint lab set up between Kikkoman and NUS Food Science & Technology Programm for research on function and safety of new food products (October 2005)
- b) Joint research between General Motors and NUS Department of Physics on hydrogen storage (March 2006)



Pressure Composition Isotherm (PCI) unit – Volumetric measurement of hydrogen storage



Intelligent Gravimetric Analyzer – Microbalance for the hydrogen absorption & desorption measurements

NUS Enterprise
08 Dec 2006

17

NUS Enterprise - NUS Entrepreneurship Centre - providing entrepreneurship support



To nurture the spirit of entrepreneurship & innovation among the NUS community, and to advance knowledge of technology venturing practice through *venture support, incubation, education, outreach & research.*

NUS Enterprise
08 Dec 2006

18

Key Outreach Programmes



NUS-BioSingapore Life Sciences
Technology Showcase

Ascendas-NUS Mentoring Program



6TH START-UP@SINGAPORE



Strategic Values

A rigorous entrepreneurial training & support program...
For Aspiring Entrepreneurs In Singapore

"I am pleased that since its inception, Start-Up@Singapore has become a platform where creative minds as well as business minds gather for networking and exchange. Start-Up@Singapore has established itself among VCs, MNCs, and public organisations as a venture lab for spawning business ideas. It has also become the launch pad for many start-ups."

— **Prof Shih Choon Fong,**
President, NUS



Strategic Values

A major vehicle for youth entrepreneurship education...

"We are pleased to be part of this very important initiative, to encourage youths to realise their entrepreneurial aspirations. Being entrepreneurial also means daring to be creative and innovative in the way we work, study and even play. It's so important nowadays to think out-of-the box. So this platform not only encourages youths to be aware of the option to realize start-ups of their own one day, it also fosters a culture of innovation, adventure and risk taking, characteristics which are so important in today's world and business climate."

- **Mrs. Audrey Liow, Managing Director,**
Nestlé Singapore Pte Ltd



CROSSING BOUNDARIES: CREATING WINNING START-UPS, BUILDING GLOBAL ENTERPRISES

www.startup.org.sg

Strategic Values

A vibrant entrepreneurial ecosystem...

"Start-up@Singapore is not simply a business plan competition – it's a forum where entrepreneurs, business advisors, venture capitalists and industry leaders meet to form a thriving and dynamic community. It's a platform where ideas & dreams are born."

- **Carlos Fernandes, CEO of Perceptivel**

"We are excited to partner with Start-Up@Singapore as it is a well-established competition with a strong presence in the entrepreneurial community. Nokia hopes to draw out the enterprising spirit and creativity from our tertiary students through the "Run Your Own Nokia Shop" category

- **Ms. Kitty Fong, General Manager,**
Nokia Singapore



CROSSING BOUNDARIES: CREATING WINNING START-UPS, BUILDING GLOBAL ENTERPRISES

www.startup.org.sg

More Accomplishments from Start-up Companies

- 4 Start-Up@Singapore spin-offs nominated to represent Singapore in Asia Pacific ICT Award (APICTA) 2004 in Hong Kong, namely August Smartech, iMfinity, Wavelet Technology and World Indigo
- Friartuck received Merit Award in National Infocomm Award 2004
- Perceptivel CEO elected as Chairman of Entrepreneurship and Knowledge Management SIGs of Singapore Computer Society
- PurpleACE, which today employs more than 25 people with offices in Singapore, Ireland, Spain, Beijing and Bangalore and with customers stretching across Australia, Malaysia, Philippines and Sri Lanka, was recently featured in IHT



CROSSING BOUNDARIES: CREATING WINNING START-UPS, BUILDING GLOBAL ENTERPRISES

www.startup.org.sg

Key Research Initiatives

**US Patenting Activities
AS
Innovation Indicators**

Asia Pacific IP Scorecard



**GLOBAL ENTREPRENEURSHIP MONITOR
SINGAPORE REPORT**



STANFORD PROJECT ON REGIONS OF INNOVATION AND ENTREPRENEURSHIP **SPRIE**
**SILICON VALLEY – ASIA ENTREPRENEURIAL LINKS
 RESEARCH PROJECT**

NUS Enterprise – Venture Creation

Venture Support



Nurture successful NUS spin-offs and start-up companies involving NUS students, staff, alumni and NUS Intellectual Property until they receive significant external funding

Fund for University Student Entrepreneurs (FUSE)



1. Develop student entrepreneurial talent;
2. Change “employee” mindset;
3. Service NUS community & external customers;
4. Create role models;
5. Total S\$5M funding over 5 years
 - No. student ventures per year: 10-15
 - 80% Funding: up to \$60K
 - Students invest 20% or \$15K



Venture Seed Fund – Track record of success in early- stage investing

1. Established in January 2003
2. S\$5million seed fund
3. Invest \$300K each with 1:1 matching by EDB SEEDS

MIKROTOOLS

Your partner in micro precision machining technology

World's first sub-100 micron
Integrated machining tool



Chiral Sciences & Technologies-
Safer drugs

avantwerx
INTEGRATED CONTENT SOLUTIONS
Web content creation and
Management tools

Mozat – Mobile applications

third SIGHT

Next Generation Email



tenCube

Mobile security & tools

genometri

Rapid industrial design generation
& prototyping

BioNano

Bionano sensors & ph meters

FRIARTUCK
SCHEDULING COMPLEX EVENTS

Complex constraint scheduling
Solutions – NASA Mars Mission



CADI - Remote wireless
biosensing

incent

Mobile marketing & profiling

NUS Enterprise
08 Dec 2006

27

NUS Venture Support

Incubator in NUS



NUS Business
Incubator



Inside the Incubator

- 1 University, 3 Faculty-level, 2 Halls-level incubators
- Capacity: 35-40 start-ups
- Current Incubatees: 28 companies
- Access to NUS resources, technologies and expertise
- Mentors, Advisors & Business Network
- Member of HotSpots network of incubators
- Conduct seminars, workshops, legal clinics

NUS Enterprise
08 Dec 2006

28

Our Facilities...



No. 8 PGP



No. 7 PGP



Container



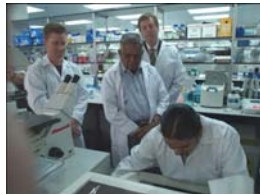
- One fee for office and shared facilities, air-con, electricity, utilities, 24-hr access, projectors etc..

Spin-offs from NUS



ES Cell International

ES Cell International (ESI) is a regenerative medicine company and leading provider of products and technologies derived from human embryonic stem (hES) cells.



Visit to ESI by President Nathan

It is currently developing a robust hES technology platform and an extensive intellectual property portfolio and maintains its pre-eminent position through constant development, protection and dominance of manufacturing processes for hES cells and their progeny.

ESI currently occupies a 7,000 sq feet cutting-edge global R&D facility at the Biopolis, Singapore's premier biotechnological research park.

Spin-offs from NUS

Semicaps Pte Ltd



Semicaps' head office – The Fleming

Semicaps' roots can be traced back to the team of lecturers at the NUS Center for Integrated Circuit Failure Analysis and Reliability (CICFAR) who introduced the first batch of Scanning Electron Microscope Image Processing Systems into the market.

Semicaps has now expanded worldwide with a marketing network that spans the United States, Europe, Korea, Taiwan and Asia Pacific and continues to collaborate closely with CICFAR for greater refinement in techniques and instrumentation.

NUS Venture Support



NUS-Funded Start-Up



Push Email



Push RSS



Remote Desktop



Contact



Camera Access



Synchronization



MOZAT is a mobile solutions provider, dedicated to developing mobile communications solutions that mobilize the future for business organizations and professionals.

- Founded in 2003 by 2 PhD students
- Funded by NVSF and EDB SEEDs
- Microsoft Enterprise Mobile Partner
- 2004 APICTA (Asia Pacific ICT Awards) winner
- Free trial at www.morange.com

NUS Venture Support



NUS-Funded Start-Up



Patient's temperature and location can now be measured and tracked automatically, wirelessly and continuously by a revolutionary product range called SmartSense 100 offered by CADI SCIENTIFIC.

- Founded in 2003 by NUS alumni
- Raised more than S\$1 Million funding
- Customers include Singapore General Hospital, Tan Tock Seng Hospital and KK Women's and Children's Hospital

[illegible]

Playing for success

The innovative ExoroGame teaches real-world business lessons, says **DANIEL BUENAS**

A photograph of four men, likely the hosts of the game show, smiling and holding up various playing cards. They are positioned in front of a dark background with a large, illuminated sign that reads "EXTRA GAME" in yellow and white letters. The man on the far left is wearing a blue shirt, the second man a dark jacket, the third a blue jacket, and the fourth a pink shirt and glasses. They are all holding fans of cards, including face cards and numbered cards.

"In a way, it's a reassuring activity for them, as well as a revenue-generating mood for the islands."

Besides promoting the game in Singapore, the company also hopes to make it an activity in overseas markets, like China and India.

"I think with the Chinese government's coming up and promoting sports as a strategy, it's a good market with a very good opportunity, especially for universities," says Koh Y. A China native and the company's chief executive officer, he says, "We have to increase the game into the Mainland."

However, developing the game into a television sport, as Ben's dad, sponsoring officer Sam Lingpin, plans to do,

"The five versions were very chaotic and I didn't know what was going on," he says. "I was in the U.S., Saudi Arabia, and elsewhere, trying to get it done."

That was when the group decided to turn out the kinks and develop the game further by "plugging conflicts" and adding the "chase" element. It was a lot of fun.

Kramer's old technology (Edward Cheng and Mark Hines) takes the game into families, to "school," to friends, and to the gym. It's a lot of fun, but it's not a business.

What does't count

"Let's you learn, from a school, another thing, that you can't do it by yourself and other things, and that the strategy you initially planned may not work as strongly," he says. "Each time, there are new players playing, different minds, different sets of information. From the whole outside might help it. Again, he also points out that the game is designed to be non-competitive, with the main

Profit-making social enterprise: (page 181)
Enova's (100 San Jiaxing, C10 Wx M, C10 Kx Mx and C10 Axx) Sim with the Enrolment. The M.S. engineering undergrads plan to release in January a retail package of the game, which costs £200 to £250.

From the destruction of other players, insured of through "22man" cards or files.

To maintain the real world, the game is played in a "real world" setting, being from Paris, as "nobody is going to stop and wait for you to catch up" to the computer players out to its publicly released.

That said, as to be in the present of many factors of end of the game is the game is just for pleasure in the end.

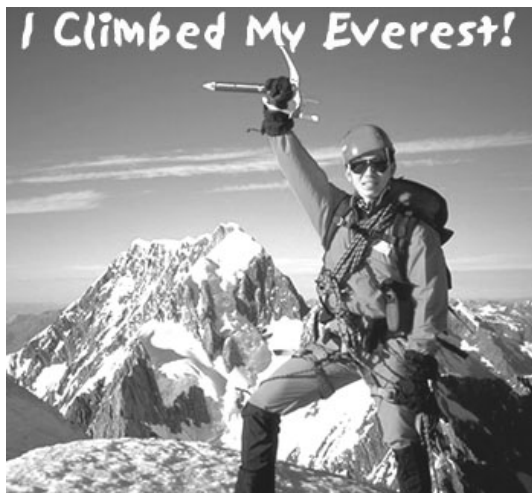
Although the exact price of the game hasn't been said, it's said to be in the range of \$100 to \$150.

There is already a waiting list of cards now wanting to purchase the retail package, and upcoming sales of the start-up include the implementation of the game via mobile and online platforms, as well as the possible launch of a "22man" card game.

NUS Enterprise Goals



1. University of choice for *entrepreneurially-minded students* in Singapore & the region
2. Enriching the pool of faculty with innovative and entrepreneurial mindset
3. University of choice for industry-relevant R&D collaboration in Asia by leading global high-tech firms
4. Recognized leader in *entrepreneurial promotion in University education, technology commercialization and venture creation*



Website:

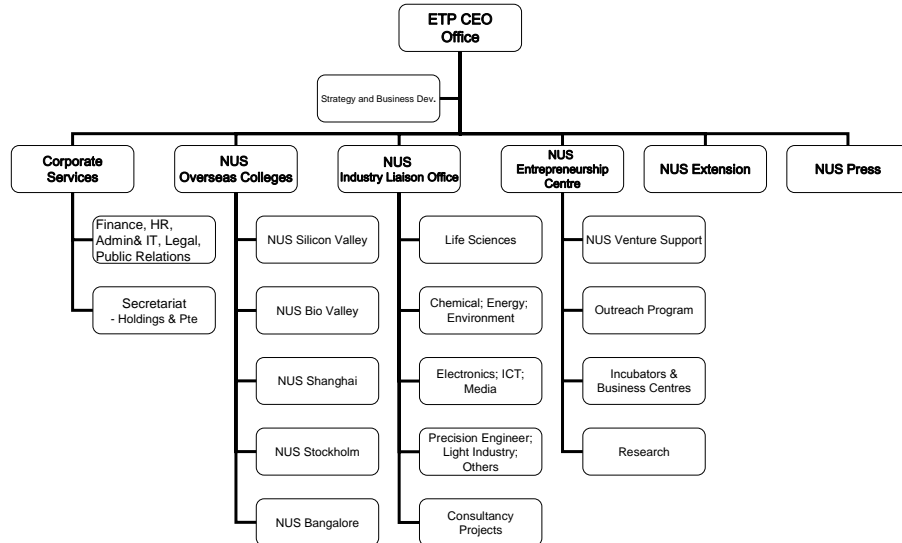
<http://www.nus.edu.sg/nvs>

<http://www.nus.edu.sg/enterprise>

Email:

nvshkl@nus.edu.sg

ETP Organisation Chart



NUS Enterprise
08 Dec 2006

39

NUS Overseas Colleges



NOC Student-Organised Activities

Silicon Valley

1st "Beyond the Gloom & Doom: Global Entrepreneurship in the Next 5 Years", 22 Nov 2002

Speakers/Moderator: (SV)

Michael A. Pierantozzi, Director of e-services Market Development & Strategy, HP

Heldi Klauser, Independent Marketing & Strategy Consultant

David Webster, President, Nanotech Associates

Tom Kosnik (Moderator), Consulting Professor, Management Science & Engineering, Stanford University

2nd "Running the Marathon, Entrepreneurship Built to Last", 9 Apr 2003

Speakers: (SV)

Guy Kawasaki, Chairman & Founder, Garage Technology Ventures

Kamran Elahian, Chairman & Co-founder, Global Catalyst Partners

Shirish Andhare (Moderator),

3rd "Silicon Valley in South-East Asia - Making it Happen", 16 Mar 2004

Speakers/Moderator: (SV)

Ong Peng Tsin, Founder of Interwoven (Singapore)

Dr Sehat Sutardja, President & Co-founder, Marvell Technology Group Ltd

Professor Casey Chan, Founder of Quantagen (Singapore)

David A Meale (Moderator), Managing Partner & Founder, Action International, LLC

NUS Enterprise
08 Dec 2006

40

NUS Overseas Colleges



NOC Student-Organised Activities

Bio Valley

4th "Innovation through Collaboration", 25 Oct 2003

Speakers: (BV)

Richard Overmoyer, Deputy Secretary, Office of Technology Investment Commonwealth of Penn, Dept of Community & Economic Development

Dr Abraham Abuchowski, Chairman & Founder, Prolong Pharmaceuticals

Dr Chris Pak, President & CEO, Molecular Targeting Technology, Inc.

Shanghai

5th "Doing It The CHINA Way!" Panel Discussion at Fudan University

Speakers: (Shanghai)

Virginia Cha, CEO, WOVE Holdings

Choon, CEO, Simply* The Group

Phng LJ Kheng, Manager, General Manager, The Coffee Bean & Tea Leaf

Edward Gwinn, Managing Director, De Global Ltd

Singapore

6th "Taking the Plunge! Entrepreneurship during an Economic Downturn", 8 Oct 2003

Speakers/Moderator: (Singapore)

Professor Patrick Turner, Director of Entrepreneurship, INSEAD

Dr Francis Yeoh, CEO, Green Dot Internet Services

Dr Ron Sim Chye Hock, CEO, OSIM

Assoc Professor Wong Poh Kam (Moderator), Director, NUS Entrepreneurship Center

Industry Liaison Office



Marketing Initiatives

- Promote NUS generated technology and expertise locally and internationally
- Provide on-line database of technologies for licensing
- Launched Technology Brokerage Program
- Collaborate with international technology transfer offices to jointly market technologies

Target Achievements

- More NOC graduates to start their own companies
- Increased number of NOC graduates employed by, or involved, in start-up companies
- A rise in the number of new internship companies in various fields and industries to be sourced