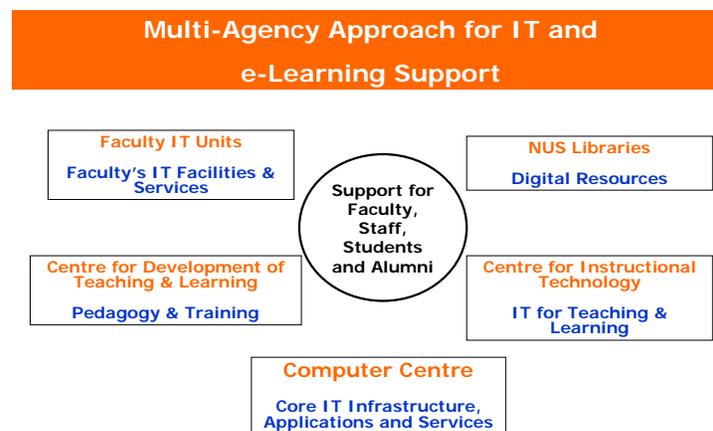# NUS Technology Enhanced Learning Initiatives

1997

Notebook Ownership Programme – 1st University to launch in this region.
The need by students and faculty for communication, collaboration and continuous access to campus and Internet resources was recognized as an essential ingredient in the NUS IT strategic initiative and the highly successful Notebook Ownership Programme was launched.

Students purchase at a discount a fully wireless enabled notebook equipped with relevant software to access all campus and e-learning resources. Interest free loans are provided for students to purchase these notebooks. About 6,000 notebooks are sold each new academic term and about 90% of all NUS students now have a notebook.

Computer Centre Initiative

1999

Multi-Agency Approach for IT and e-Learning Support

Faculty IT Units — Faculty's IT Facilities & Services	**NUS Libraries** — Digital Resources
Centre for Development of Teaching & Learning — Pedagogy & Training	**Centre for Instructional Technology** — IT for Teaching & Learning

Support for Faculty, Staff, Students and Alumni

Computer Centre — Core IT Infrastructure, Applications and Services

More focus and accelerated pace

Multi-Agency Approach

NUS adopted the multi-agency approach to provide IT and e-learning support. This approach has allowed NUS to move at a more accelerated and focused pace in support of IT and e-learning services for the campus. NUS realized that ICT services for teaching and learning is more than hardware and IT, the Centre for Development of Teaching and Learning (CDTL) focused on the essential soft skills, i.e. faculty development, training, micro-teaching and the art of teaching (pedagogy).

There is a strong partnership between the Centres and with Computer Centre. Computer Centre looks after the core IT infrastructure and critical application services for NUS such as :-

- Providing high bandwidth campus network with global connectivity to Internet and Internet-2
- Fully wireless and wired campus network
- Digital Library
- Integrated student information and administrative system
- Staff administrative and academic computerization – staff portal
- High performance computing support
- IT Security Framework and Policy
- IP Telephony

The NUS IT infrastructure has enabled e-learning services to be launched, sustained and enhanced.
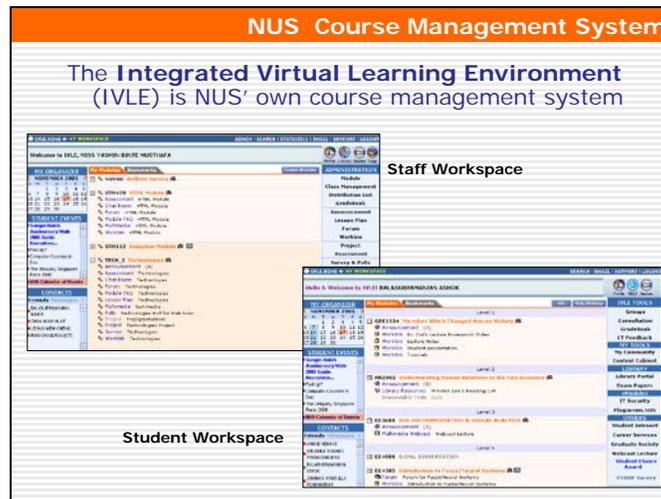
<u>1999</u>
NUS E-Learning Position

- Information Technology continues to be an enabler and facilitator to improve the teaching and learning processes.
- Focus on supporting and implementing technologies that support the 'Seven Principles for Good Practice in Undergraduate Education' [1] and on technologies that help students and staff to be more productive in what they already do.
- Balancing classroom interaction with online teaching.
- Technology enhanced learning may not be suitable for all teachers and modules.

NUS' e-learning position states that ICT will be used to support and supplement teaching and learning and it also recognises the importance and value of face-to-face teaching in building and synthesizing relationships between staff and students and among students.
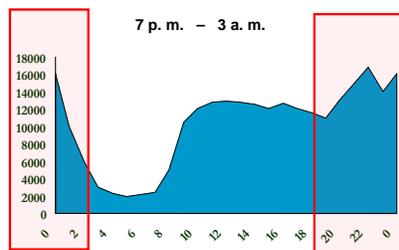
Integrated Virtual Learning Environment.
NUS saw the need for a course management system that is tightly integrated to the NUS Library and student administrative and academic systems and services. The Integrated Virtual Learning Environment (IVLE) was launched to provide communication, collaboration services, class management, lesson plans and assessment tools for faculty to supplement and support their teaching.

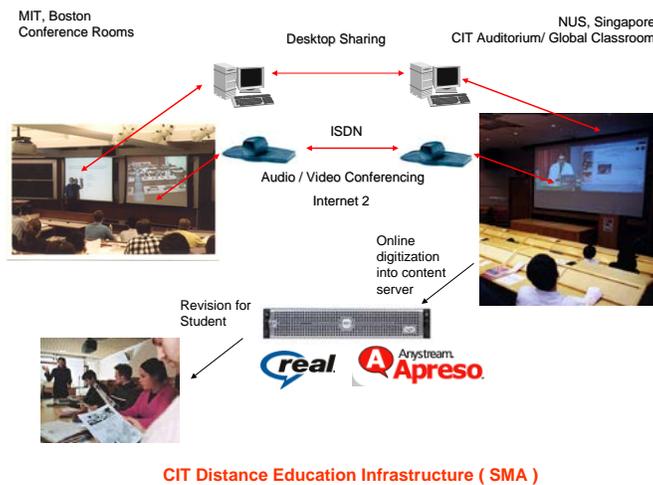90% of all NUS course modules have a presence on IVLE as at December 2016.

Student Activity

Student activity on IVLE is from 7 p.m. to well pass 3 a.m. daily and e-Learning services now impact most faculty and students on a <u>daily basis</u>. Faculty and students are dependent on the e-Learning system (IVLE) to get their work done and have <u>no tolerance</u> for variations in availability or performance. E-Learning is no more a trend but a necessity for NUS' IT-savvy students.

1999
Singapore-MIT Distance Learning Programme

Launch of the Singapore-MIT Distance Learning (DL) Programme. A first of its kind DL programme over Interent-2 spanning 12 time zones. Leveraging on the expertise between NUS and MIT. CIT supports both the technology and physical spaces to conduct these lessons.

CIT Distance Education Infrastructure (SMA)

2000
IVLE, winner of the E-nnovator Awards 2000 Open Category.

"IVLE has been instrumental in spearheading the use of IT in teaching and learning in NUS. Its interface and rich plethora of tools, coupled by an active feedback mechanism from staff and students, have made IVLE stand out against other competitors' platforms. The E-nnovator Award is a testimony to IVLE excellent quality," said Prof Lawrence Wong, Director, Computer Centre.

IVLE catered to approximately 10,000 NUS staff and 30,000 NUS students. The award was presented by Lim Swee Say, Minister of State for Communications and Information Technology and Trade and Industry.

Webcast Lecture
Students could now watch lectures live over the Intranet. Webcast lectures facilitate and reinforce learning and study by allowing students to revise closer to the exams and facilitating students to focus on the lecture and minimize the taking of notes. Webcast lectures are archived and accessible for two years.

2007/2008	2,293 lectures recorded
2015/2016	6,271 lectures recorded

<u>2002</u>
Network TV
CIT launched a 24 by 7 streaming broadcast service that streamed commercial TV channels to NUS campus and student residences. Channels streamed include news, educational and entertainment channel. CIT also subscribed to Research Channel.

<u>2003</u>
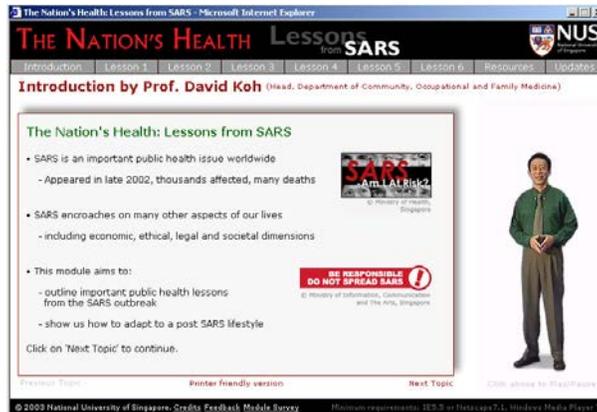**CIT Director**
Mr. Ravi Chandran appointed new CIT Director

SARS Online Courseware
NUS went virtual as SARS affected NUS. A combination of e-learning technologies (e-meetings, instant messaging, application sharing and video conferencing) was used to facilitate meetings.

NUS was the 1st organization that made it mandatory for all 30,000 students to take an online course on SARS. Student's response was positive on NUS' pro-active approach in teaching students on SARS.

Online Communities
NUS recognized that learning also takes place outside the classroom and launched online communities on IVLE to provide students an effective yet secured online environment for learning by fostering a *culture of learning*, *sharing and collaboration informally*. Communities are designed to be initiated by students for students.

APRU Special President's Meeting
The Association of Pacific Rim Universities (APRU) conducted for the first time a Special Presidents' meeting using video conferencing with 32 sites on the 19th of June 2003. This is the first time where such a large scale video conference with 32 University Presidents around the world has taken place. This successful video conference lasted for about 2 hours. NUS was the 1st organization to have ever done such a large-scale video conference involving 32 sites in different time-zones.

Plagiarism Prevention Service
NUS was the first university in this region to launch a campus-wide plagiarism prevention service using a commercial service called Turnitin for its staff and students. Students were encouraged to use this service to check on their own assignments before submission to staff.

2003

APRU Distance Learning and Internet Conference (DLI)

NUS being one of the founding members of Association of Pacific Rim Universities (APRU) held the 4th annual APRU DLI conference in Singapore. The theme for the DLI conference was 'The Global Knowledge Enterprise – Learning Without Walls' and the Guest of Honour was NUS President Prof. SHIH Choon Fong. CIT and Computer Centre co-hosted the APRU DLI 2003 conference and about 150 overseas participants attended this conference.
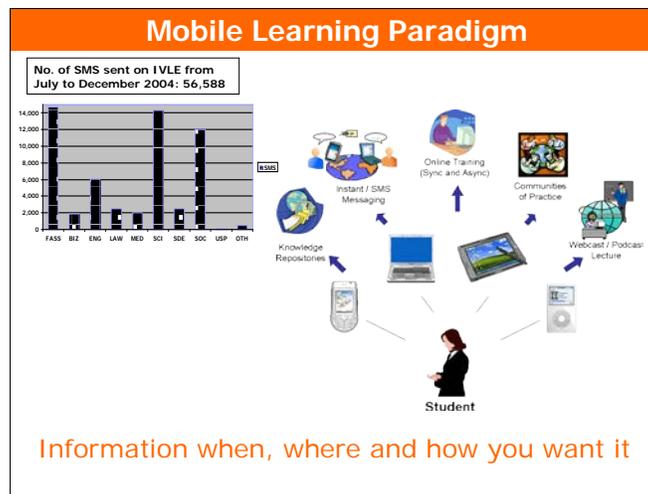
2004

Student e-Portfolio

NUS launched the student e-portfolio system (SELF). SELF is a collection of students artifacts, reflective statements accumulated over time that demonstrate learning, aspirations and accomplishments. It provides faculty with opportunities to access the student's work and can be used in career advising, course selection and application of postgraduate studies. This project is being reviewed due to new software and services and career initiatives set by NUS.

Mobile Learning Paradigm

m-NUS launched to provide SMS and WAP enabled services to students. Faculty could now sent course announcements to their students via SMS. A mobile version of NUS course management system called Mobile IVLE running on Pocket PCs was also concurrently launched.
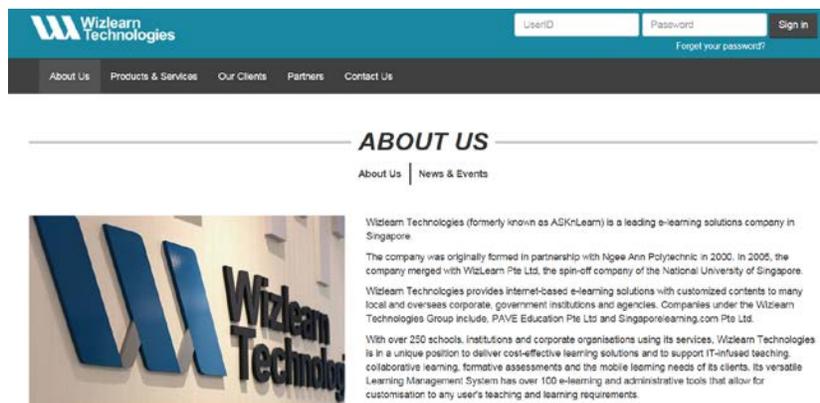
2004
ISO 9001:2000 Certification
CIT was audited and certified for ISO 9001: 2000 Quality Management System. Services run by CIT that were certified for ISO were the conferencing services, webcast services, courseware development and video production services. Certification ensures CIT maintains and constantly improves its level of service and all workflows are fully documented.

Rapid Content Development
CIT launched the rapid content development toolkit for staff. Using software called Breeze (now called Adobe Presenter), staff were quickly able to create appealing content that can incorporate multimedia components into their presentation slides. Development for content creation was cut from months to weeks.

NUS Course Management System (IVLE) commercialized.
NUS formed a company called Wizlearn Pte Ltd to commercialize the NUS Course Management System called IVLE. Wizlearn Pte Ltd marketed IVLE under the name Wizlearn LMS to schools and junior colleges. NUS no longer has any association with Wizlearn Pte Ltd.

2005
MIS Asia IT Excellence Award 2005
NUS wins the MIS Asia IT Excellence Award 2005 Best Business Enabler (Education) for NUScast. CIT, with the support of Faculty IT Units, Faculty administrators and technical officers convinced the award judges that this low-cost homegrown product that streams lectures and events over the Intranet adds considerable learning value to students at NUS.

CIT's Flexible Education team and staff from various Faculties

6

2005
Podcast Lectures
CIT launched the lecture podcast series that allowed students to listen to their lectures using MP3 players.

Launch of Academic Culture Courseware
An online courseware on Academic Culture and the expectation of being an NUS student was launched. One module in their courseware is about what constitutes plagiarism and the consequences and penalties associated with it. This courseware was led by Vice-Dean of FASS, Assoc. Prof. John Richardson and his University-level task force. The production of this courseware was developed by CIT.

2005
Secure Assessments
CIT developed a secure online assessment environment to allow Faculties and departments to conduct online assessments from computer clusters to the IVLE Assessment tool. Secure Assessments ensures students do not have access to other external resources on the desktop while taking the examination online from IVLE. The Faculties of Medicine, Law and School of Computing are the first users of this service.

M.Sc in Financial Engineering (by Distance Learning)
NUS' first postgraduate distance learning course was supported by technologies provided by CIT. IVLE and the virtual classroom software facilitated this pioneering postgraduate course.

2006
NUS Galleria
CIT, Computer Centre and NUS Libraries launched the NUS Galleria, a multimedia repository containing video, audio and image files relating to the University. These multimedia objects cover various events and activities, spanning the length and breadth of NUS. Staff can also upload their faculty's or department's audio-visual materials for archival to NUS Galleria.

NUS Radio Pulze
CIT worked with the student's DJ club to successfully launch NUS Radio Pulze. It was officially launched by NUS President on 14th February 2006.
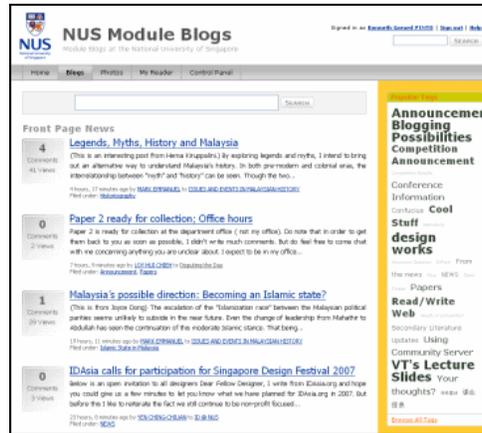
NUS Internet Bandwidth
Computer Centre increased the NUS Internet bandwidth to over 400 MBits allowing rich media contents to be used extensively on NUSNET.

Computer Centre Initiative

2006
NUS Instructional Blogs

CIT launched this service due to the popularity of blogging among staff and students and the need to develop a community among staff and class students. Blogging also encourages active participation among students on topics posted by the staff.

2007
NUS Course Management System (IVLE) moved to .NET Platform

IVLE was re-designed, re-developed and migrated to a .net platform incorporating web services and e-learning standards. IVLE was also integrated to NUS Libraries through Web 2.0 services. It was launched on May 27th 2007.
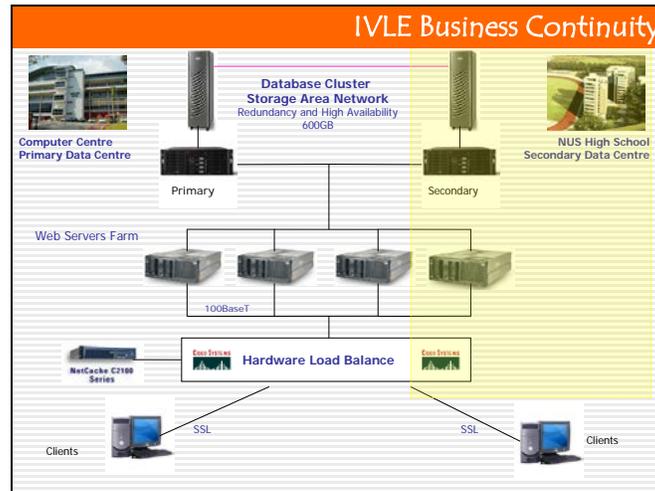

User Created Podcast Service

Staff and students can now create their own podcast and share their podcast with others through the NUS course management system (IVLE) using a product called Wimba.

<u>2007</u>

NUS IT Recovery Centre
Computer Centre launches NUS IT Recovery Centre in July. CIT took this opportunity to upgrade the NUS course management system (IVLE) infrastructure to ensure this system is placed on a disaster recovery platform. IVLE's database and web servers are now at different locations and utilizes high performance storage area networks for data storage.

Classroom Clickers Service Launched
To promote interactivity and participation in lectures, the clicker-based classroom response system was launched. Staff can borrow these classroom clickers from CIT to gain immediate feedback from their students during lectures. Clickers are loaned for one semester.

Career Development Courseware
NUS Career Centre and CIT developed a series of online career development modules for students. These modules were hosted on IVLE.

Singapore's Presentation bid for Inaugural Youth Olympics Games
The University hosted Singapore's final presentation bid to the International Olympic Committee (IOC) via video conference, facilitated by CIT and the Office of Estate and Development (OED). CIT provide video crew and conference support while OED handled logistics.

2008

NUS eLearning Week

CIT launched eLearning Week together with the department of Communication and New Media (CNM), FASS and Office of Safety, Health and Wellness (OSHE). Through eLearning Week, CIT hopes to prepare, monitor and test the readiness and ability of our students, staff and systems to cope with an emergency situation when on-campus teaching facilities are unavailable. E-Learning week was held from Feb 18th to Feb 22nd and about 1,500 students took their lectures and tutorials online.

NUS Mobile Blog Service (MoBlog)

CIT working with an external partner launches this new Web 2.0 service. It allows students to create a blogging community and interact with their community members using their mobile phones. This service was integrated to NUS course management system (IVLE)

NUS Second Life (NUS 2nd Life)

Computer Centre launches NUS on the second life 3D virtual world with the acquisition of NUS own virtual island. NUS second life was launched on March 12th. NUS 2nd Life allows students to come together to interact, play, learn and communicate in an online 3D virtual environment. Student using NUS 2nd life can engage in rich, sensory experiences, authentic contexts, activities and opportunities for reflection for a range of educational applications. Three NUS modules are using NUS 2nd life as part of the curriculum.

Computer Centre Initiative

2008

University Town

CIT in collaboration with Computer Centre are part of the University Town planning committee and is responsible for recommendations for audio-video, webcast and video conference services for University Town. CIT with Computer Centre are also responsible for the design of the lecture theatres, seminars rooms and common spaces. The first Macintosh Commons was launched at University Town.

Study Tour of UK and US Universities on Adaptable Teaching Spaces

In preparation for University Town, a team of six staff led by Vice-Provost Prof. Lai Choy Heng (Academic Personnel) went on a study tour of 7 universities (3 UK, 4 US) in May 2008 to learn more about adaptable and flexible teaching and learning spaces. CIT Global Classroom was updated as a prototype based on this visit.
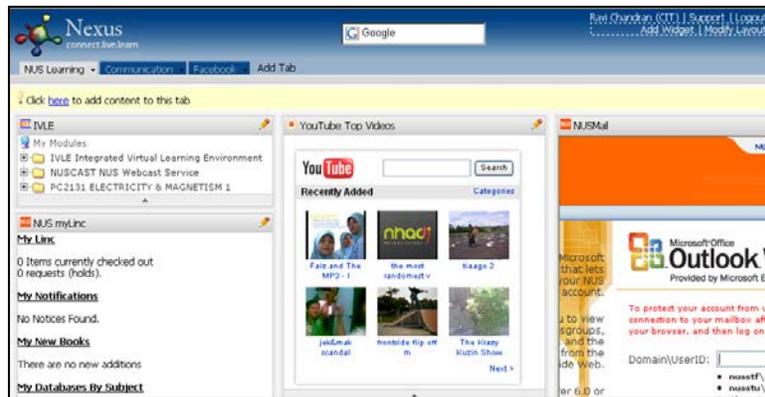

IVLE 9 and Mobile IVLE

IVLE 9 was launch in June 2008 with performance enhancements to the workspace and tools, project, chat room and a new IVLE community. Besides a new IVLE, a mobile version accessible by Smart phones and PDAs was launched at the same time.

2008
NexUS

A new personal learning environment that gives the users a fully customizable drag and drop interface incorporating the latest Web 2.0 techniques called NexUS was launched by CIT. Users can pick and choose from a wide variety of NUS and internet resources. It provides consolidation, communication and personalization. CIT has launched Nexus as an open source product.

2008
Campus-wide Mind-Mapping Tool

CIT launches a web-based campus-wide mind-mapping tool for staff and students. This collaborative tool allows student to discuss on topics using mind-mapping techniques.

Blog.NUS and Wiki.NUS

Blogs and wikis, are major components of the read/write web. CIT introduced Blog.NUS and Wiki.NUS so that the university community has specific Web 2.0 tools for academic, educational, research or administrative uses. Students and staff create a blog for personal learning and reflection; module, tutorial class or any other group activities; a departmental or faculty news blog and providing information on an event or conference. Blog.NUS runs on a WordPress engine and is hosted by Edublogs Campus. Blog.NUS now supersedes the NUS instructional blogs.

With Wiki.NUS, staff and student have a web page that selected people (or anyone) can edit. With Wiki, you can build a knowledgebase, share resources and collaborate on projects. Wiki.NUS is hosted at NUS using Confluence Enterprise Wiki software.

NUS Service Class

CIT applies for NUS Service Class to benchmark its services for service excellence. External assessment was done on September 4th 2008. CIT was successfully assessed and awarded the 'Recognition for Service Excellence'. CIT was judged on service leadership, service agility, customer experience and customer delight.
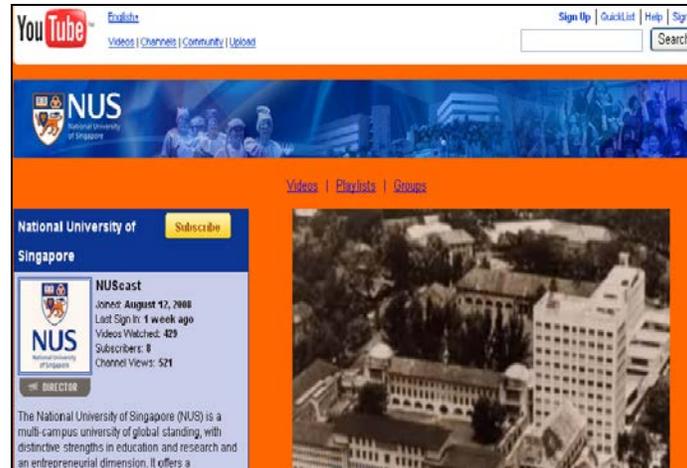
CIT Audio-Visual Awareness Roadshow

CIT's multimedia group conducts the 1st audio-visual roadshow for teaching staff on Oct 14th. The aim of this roadshow was to highlight to teaching staff how videos can be used to supplement and support their teaching. This whole day roadshow held at University Hall combined talks by NUS teaching staff who have used videos to support their course with 'live' video production techniques conducted by the multimedia group.

2008
NUS YouTube

CIT launched an NUS channel on YouTube on 1st November 2008 to support the University's out-reach efforts (to go where the students are going). This channel can be viewed at www.youtube.com/nuscast.

CIT's Remote Webcast Recording IQ Project received a 'Gold' award at the NUS In-house National IQC (Innovation & Quality Circles) Convention on Thursday, 20 November 2008.

IVLE Student Survey 2008

CIT conducted an online IVLE student survey from September to November 2008 to gauge feedback on the usefulness and effectiveness of IVLE to support teaching and learning. The results of survey are:-

How often do you access IVLE in the semester?	> 3 times per week	90%
How many of your course modules made use of IVLE?	> 3 modules	90%
Where do you access IVLE from most often?	Home 67%; Campus	32%
Has IVLE facilitated communication between lecturers and students?	Yes	90%
Has IVLE facilitated collaboration between lecturers and students?	Yes	85%
How would you describe your IVLE user experience?	Positive	80%
Do you think there is a need for such a system like IVLE?	Yes	98%

What do you like most of IVLE?
Download and access my course notes and assignments
One-stop access to all my course information and digital resources for my course
Ability to receive SMS announcements
Ability to collaborate with lecturers, friends on my projects
Most frequently used tool on IVLE: 1-Workbin; 2-Announcement; 3-Online Syllabus; 4-Webcast Lectures;

New NUS President

NUS President Professor Shih Choon Fong has been named as the Founding President of Saudi Arabia's King Abdullah University of Science and Technology (KAUST). Professor Tan Chorh Chuan will succeed Prof. Shih as the next President of NUS.