



IMF - Technology Impacts Inequality

The International Monetary Fund (IMF) *World Economic Outlook* (October 2007) concludes that, contrary to expectation, technological advances – not the globalization of trade – are more responsible for rising inequality in incomes, globally and within nations. In fact, the bank says technology has been the driving force of inequality since the 1980s.

To improve the income inequality gap, the IMF recommends improving education and job training and making it easier for workers to transition between jobs and economic sectors, rather than slowing technological progress.

This study supports ICONS' mission of improving cost-effective technical education as a method for economic advancement - of individuals, organizations and aggregate economies.

More information on this report is available at:

<http://www.imf.org/external/pubs/ft/weo/2007/02/index.htm>



ICONS Completes Curriculum Changes

This quarter, ICONS is completing grant-related CNIT curriculum changes and additions.



At grant award, ICONS's goal was to create an AS degree, 1 new certificate and 6 new courses. As of Fall 2008, the end of the grant period, CNIT has received approval for and will have delivered:

- A Computer Networking and Information Technology AS Degree
- A new certificate in Digital Home Technology Integration (DHTI)
- A new certificate in Convergence Technology
- A new Fiber Optic Technology course
- A new Introduction to Network Convergence course
- A new Digital Home Technology Integration (DHTI) course
- A new Ethical Hacking and Network Defense course
- A new Advanced Ethical Hacking course
- A new Fundamental of Voice over IP (VoIP) course
- A new Operating Juniper Networks Routers in the Enterprise course
- A new Advanced Juniper Networks Routers in the Enterprise course

These accomplishments exceed the expectations of the grant.

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ICONS Engages in \$1m Switch Conversions

City College of San Francisco is under way with a \$1 million project to upgrade its institutional Ethernet switching equipment, and ICONS is collaborating to engage CNIT students in the effort.

It is a big job to provide the information and communications technology infrastructure to support more than 100,000 students, more than 2,000 faculty and staff, a dozen major campuses and more than 150 other instructional sites annually at City College of San Francisco. Those challenges are the responsibility of its Information Technology Services (ITS) department.

ICONS funded a comprehensive Computer Networking and Information Technology department curriculum review study, engaging outside expertise from the Convergence Technology Center (CTC), an NSF ATE funded Center in Texas. The study involved numerous working sessions with CNIT leadership and faculty and a comprehensive knowledge and skills survey with ICONS' Advisory Panel.

That study concluded that demand for metro optical technicians had not developed at anticipated rates, and our community would be better served in the near term with a focus on convergence technologies employed by enterprises. That affected course and certificate development selections delivered by ICONS above.

That study also resulted in the identification of gaps in certain existing courses, in course offerings and certifications and in what the CNIT AS degree would consist of. CNIT has an ongoing effort now to fill in course and certification content gaps. As a result of its findings, CNIT also developed the following new courses:

- Cisco Wireless
- Windows Vista Technical Support
- Managing and Maintaining Windows Server
- Windows Server Infrastructure

CNIT also significantly revised the following certifications:

- Fundamentals of Networking
- Network Security
- Windows Networking
- Wireless Networking



CNIT and ICONS are very grateful to the National Science Foundation for funding these meaningful improvements to City College of San Francisco's efforts to serve its Bay Area and California communities with ICT technician education.

International Collaborations Proceed

This semester, ICONS international collaborations include CNIT students and students at Centre des Formations Industrielles (CFI) Gambetta in San Francisco's international sister city, Paris, France working together on Cisco Academy related projects.

The project launched with a Telepresence conference on 2/6/08, using state of the art Cisco Systems facilities that allow up to 12 people to meet in separate continents, as if all in the same room.



Additionally, January 9-11, CNIT/ICONS furthered collaborations with SENAC in Rio de Janeiro, Brazil in a series of working sessions which will lead to Cisco and Juniper students working together remotely, using WEB2.0 tools to design networks.



Welcoming Frederico Novaes of SENAC Rio at a January 10 reception hosted by Trustee Lawrence Wong at his home are (left to right) Joanne Low, Dr. Alice Murillo, Dr. Don Griffin, Trustee Lawrence Wong, Esq., Frederico Novaes, Judy Teng, Carmen Lamha and Dr. Wing Tsao.

In Paris, the Chamber of Commerce oversees technical education in programs like ours, ensuring education is relevant to employers, engaging employers as technical instructors and employing students in practical on-the-job experiences in employer workplaces. In Brazil, the Chamber of Commerce actually owns technical education institutions, working actively to ensure efficiency and relevance of technical education.

We are bringing home valuable experiences and alternate practices to improve technical education here from these collaborations.

This year, ITS is replacing its 7 year old Ethernet switching infrastructure, installing new Hewlett-Packard ProCurve 5406 switches to serve some 10,000 LAN ports in use at the college. Ethernet provides access to networked services, the Internet and Internet 2, and the public switched telephone network via Voice over IP technology for staff, faculty and students at the college.

The new switches can deliver gigabit (a billion bits per second) speeds over copper LAN wiring, 10 times the bandwidth of current switches. They also provide power over Ethernet to almost 2,000 IP telephone handsets in use at the college, eliminating the need for separate Power over Ethernet equipment and its maintenance. Improved port densities on new equipment allow a reduction in the total number of switches deployed and managed at the college. The solution architecture allows for the elimination of previously different distribution layer equipment, simplification by using the same versatile equipment at the network core, distribution and edge layers, and quick and efficient increases in distribution layer bandwidth to support increasing demands. Added with redundancy solutions at the network core and implementation of new network protocols, these improvements are producing a much faster, simpler, more reliable, well-organized and easily managed and maintained network at the college.

ITS Network Manager, Tim Ryan, is a Co-PI on the ICONS grant, and switch conversion Project Manager, James Jones, is a long-term ICONS consultant and friend. Together with ICONS PI, Pierre Thiry, and CNIT Chair, Carmen Lamha, they are working on developing opportunities for cooperation between school IT departments and school academic departments teaching network and IT skills. ITS' operations are larger and more complex than those of many large enterprises. Providing students exposure in the classroom to the realities of such a real world operation adds value to their technical educations. Giving students opportunities to actually participate in those operations, as lab aides, help desk aides, interns, project assistants and student workers provides very real value in their technical educations and careers.



Data Closet Before



Data Closet After

ITS has engaged two CNIT student interns in the project, Alexey Efimov and Ryan Carter. Two days a week, they assist in documenting the many network connections, configuration details and locations served by the existing network. They then plan and document the desired connections, changes, configurations, needed equipment and implementation logistics for new switch installations, which are implemented by Value Added Reseller, Decotech Systems' technicians. It is rare and very valuable in their careers for community college students like Ryan and Alexey to be critically engaged in, and receive professional references for, a \$1m, 10,000 port, Ethernet switch conversion project at one of the largest colleges in the world.



Additionally, students in Pierre Thiry's CNIT *Routing and Switching* course have also been engaged in the project. As a for-credit, practical exercise, they do what Alexey and Ryan are doing (above).

Students get valuable education and skills training in classrooms and labs, but real world experiences add to students' values to employers. Everything is clean and well-defined in prepared lab exercises. In reality, things are frequently not well or reliably documented; it's dirty; there are legacy, "one-off" solutions in place that need to be addressed; data is not available or is incorrect; there isn't consensus on solutions... Doing something real teaches something real.

Industry advisors frequently stress the importance of "soft" or employability skills. In addition to technical skills, it's important for students to know how to work together well in groups, organize and present information, frame decisions, show up consistently and on time, communicate effectively, be respectful, show initiative... Integrating real-world-like experiences into curriculum imparts these skills to students as natural by-products.

ICONS and MPICT are working to improve collaborations between school IT and academic departments, for benefits to both, and they are working on developing opportunities for real world experiences for ICT students to gain real world employability skills and value.

New Wellness Center Opened

This quarter, City College of San Francisco opened a new, 3-story, \$70 million, 157,000 square foot, state-of-the-art Wellness Center, a gateway to the school's Ocean Avenue campus. Located between the student union and the library, this new facility creates a much-needed campus center and an attractive, terraced connection between Ocean Avenue and the main campus thoroughfare.

Designed to consolidate physical education program requirements with those of the men and women's athletic departments, the new center successfully relocates many diverse program elements into one building, providing a spacious new home for team athletics, the dance program, physical education, and martial arts. The Wellness Center also includes an aquatics center, the first in City College's history.

Physical and nutritional health play key roles in successful education and human development, and we are pleased to have the new Wellness Center resources available to CNIT students.



MPICT Proposal Under Evaluation

The National Science Foundation has acknowledged receipt of the ICONS team's proposal to establish the Mid-Pacific Information and Communications Technology (MPICT) Center at City College of San Francisco. The proposal received a favorable peer review in step one of the evaluation process.

Graduating to the next stage of the process, we are receiving a visit on March 19, 2007 from an NSF evaluation team. Generally, they like what we have proposed, and they want to assess our team's ability to deliver what it wants to do – and the support of our institutions, local governments, community and industry.

ICONS friends and advisors are invited to attend our next Advisory Panel meeting, 3/19/08 at 11am in Cloud 218, to learn more.

CCSF Chancellor Transition

This quarter, CCSF Chancellor Philip R. Day, Jr. is transitioning to a new challenge as President and CEO of the National Association of Student Financial Aid Administrators (NASFAA) in Washington, D.C.



Dr. Day has served as CCSF Chancellor for the last 10 years. His leadership efforts included a \$650 million capital improvement program at the college, which has produced enormous benefits for the community: a new Mission campus, an optical fiber ring connecting major campuses and CENIC, network wiring and equipment upgrades, a new Wellness Center, a new Child and Family Development Center and many, many others. Significant additions planned include: a new Chinatown/North Beach campus, a new Joint Use Facility and a new Performing Arts Center. Administrative and student service improvements under his leadership have been pervasive.

Chancellor Day has been a great supporter of CNIT and ICONS, and we will miss him. "Education is the most powerful weapon you can use to change the world," he quoted Nelson Mandela in his final speech to the college. We couldn't agree more.

http://www.ccsf.edu/Offices/Public_Information/City_Currents_Arch/currents%202006/Currents011408.pdf

We are also pleased to report that CCSF's Interim Chancellor is Dr. Don Q. Griffin, whose service to City College of San Francisco has spanned 38 years, in various teacher, chair, dean, administrator and Vice-Chancellor roles. Dr. Griffin stated: "I resolve to diligently continue overseeing the on-going projects at our various campuses to create a seamless transition between administrative oversight at the college."



Dr. Griffin is a great friend and supporter of CNIT, ICONS and the pending proposal to establish the Mid-Pacific Information & Communications Technology (MPICT) Center at City College of San Francisco. We are grateful to have his leadership during this period of transition.