



### ICONS Accomplishments Reviewed

The Institute for Convergence of Optical and Network Systems (ICONS) is a 3 year, \$750,000 Advanced Technology Education project funded by the National Science Foundation to develop technician training in advanced fiber optic and converged network technologies at the leading edge of communications technology trends. It is housed in the Computer Networking and Information Technology (CNIT) Department of City College of San Francisco (CCSF), one of the largest community colleges in the U.S.

At the time the ICONS grant proposal was being prepared, CCSF was completing a 36 mile optical fiber ring connecting 9 major campuses with a major data center/carrier hotel in San Francisco, connecting to the Internet and Internet2 at 1 gigabit per second and implementing a 2,000 handset Voice over IP (VoIP) telephony solution. Previously separate voice, video and data communications infrastructure "converged" onto this new common infrastructure at the school. Representing a clear market trend, ICONS wanted to utilize this infrastructure to develop and deliver technician training in these advanced optical and convergence technologies.

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### ICONS Goals for 2008

ICONS has set the following goals for its final year:

- Develop and deliver a course in Digital Home Technology Integration (DHTI)
- Develop and Deliver Intro to Convergence Course (Replacing CNIT's current Intro to Networking)
- Present at NCTT's Winter Conference on Educational Networking Initiatives and Internet2
- Pursue International Academic Exchanges and Collaboration Relationships (Holland, France, Brazil...)
- Present at the California Community College Association for Occupational Education (CCCAOE) Conference in March
- Continue to develop the Collaborative Relationship with Comcast
- Explore and Start Positioning with Other Grant Funding Sources
- Develop a New Certificate in Convergence Technologies
- Conduct Two More Advisory Panel Meetings
- Continue Producing Quarterly Newsletters
- Secure funding to establish the MPICT Center



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### ICONS Submits MPICT Center Grant Proposal

ICONS is planning for the future! We submitted a new grant application to the National Science Foundation to establish the Mid-Pacific Information & Communications Technology (M-PICT) Center.

As a Regional Center, M-PICT would respond to growing needs for information and communications technology (ICT) technicians by providing leadership in the area of ICT technician training to more than 50 community colleges in Northern California, plus those interested in Northern Nevada, Southern Oregon, Hawaii and the Pacific Territories, creating and enhancing collaborative relationships between education and industry to meet the dynamic and expanding workforce needs of the regional economy.

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Further, at that time there were also clear calls in the marketplace for replacing aging copper communications infrastructure in California with modern optical facilities. For example, SBC (now AT&T) had announced its "Project Lightspeed," which would expand optical facilities far into neighborhoods in the region, and a CENIC sponsored "Gigabit or Bust" study by the Gartner Group had estimated a \$376 billion annual improvement to California GDP from a fiber optic communication infrastructure capable of delivering one gigabit per second communications capacity to all businesses and residences in the State.

Recognizing these trends, and recognizing the need for lead time to develop and deliver the required educational materials to develop a local workforce capable of implementing these changes, ICONS began with a focus on optical and associated convergence technologies and an intention to develop curriculum in metro optical technologies. ICONS was launched in November of 2005 at a press conference led by San Francisco Mayor Gavin Newsom.

During the course of the grant period, evaluation of market trends and feedback from exceptional industry advisors indicated that communications infrastructure upgrades in California were not happening at the pace anticipated. Therefore, demand for metro optical technicians were not materializing as anticipated. However, convergence trends were strong in enterprises. Enterprises are deploying converged voice, video and data networks over wired and wireless local area networks (LANs) and deploying convergence technologies like VoIP, utilizing fiber optics within the enterprise, developing wide area networks over the public Internet and integrating collaboration technologies.

Adapting, ICONS develops staff and advanced training utilizing state-of-the-art converged optical voice, video and data network facilities deployed at City College as a teaching environment. There are still calls for comprehensive Federal, State and Local broadband policies that would upgrade critical communications infrastructure, and industry periodically announces plans for infrastructure upgrades. ICONS is prepared to adapt to that demand any time it materializes.



Among its accomplishments, ICONS has:

- Developed a website ([www.ccsf.edu/icons](http://www.ccsf.edu/icons)) to share project progress and outcomes
- Become a National Center for Telecommunications Technology (NCTT) Regional Partner and disseminated and acquired its curriculum, courses and best practices
- Contributed to increasing CNIT enrollment 30% over the first two years of the grant
- Developed an exceptional advisory panel with over 30 members of industry (including equipment manufacturers, communications service providers, enterprises, government, K-12 schools, non-profits and public interest groups)

- Become the first Juniper Networks Higher Learning Center in North America and disseminated that relationship nationally through the NCTT
- Hosted the NCTT Winter 2007 Conference for 100 technical educators and industry representatives from around the country
- Participated as an exhibitor and presenter at the IEEE Communications Society Globecom 2006 event as one of the only community college participants in that event ever
- Formed a CCSF IEEE student chapter and worked with IEEE to promote technology careers
- Launched a Fiber Optics course which has been successfully delivered 3 semesters, providing students with real-world experience with a 36 mile metro optical ring
- Developed and delivered a VoIP course which has been successfully delivered 3 semesters
- Developed and gotten approval for an A.S. degree in CNIT
- Developed and successfully delivered a very progressive course in "Ethical Hacking and Network Defense" to improve network security education and presented that success at the 2007 DEFCON conference in Las Vegas
- Collaborated with Cisco to develop the next generation of CCNA and CCNP training, now being delivered through the CCSF Cisco Regional Networking Academy
- Became a mentee of the Convergence Technology Center
- Delivered two successful summer workshop courses to expose students, faculty and community to convergence technologies
- Contributed to NCTT's other summer and winter workshops
- Conducted training and informational events with high schools
- Developed a service learning program in which CCSF students support Network Neighborhood Centers in distressed Bayview and Hunter's Point developments
- Published a cover story in *Communications News* (<http://www.comnews.com/stories/articles/0207/0207coverstory.htm>)
- Completed a comprehensive study and revision of CNIT curriculum in collaboration with the ICONS' Advisory Panel
- Assisted CNIT Department in becoming a Microsoft IT Academy
- Assisted the CNIT Department in becoming a Pearson VUE Authorized Center for Testing, so students can cost effectively and conveniently take industry certification tests
- Secured two new CNIT faculty positions
- Collaborated with the Institute for Women in Trades, Technology and Science (IWITTS) in its NSF-funded CalWomenTech program as an initial pilot school to develop and disseminate best practices for recruiting, retaining and serving women in communications and information technology education
- Arranged student field trips to data center and service provider operations at 365 Main, 200 Paul and IP Networks

ICONS is proud of its accomplishments!



The M-PICT Regional Center would:

1. Develop partnerships among institutions of higher education to increase and improve the region's ICT training capacity. Key initial partners include Ohlone College, Foothill College, Santa Rosa Junior College and Cabrillo College, as well as the National Center for Telecommunications Technology (NCTT).
2. Deepen and expand collaboration with industry to create an ICT workforce to fully meet the economic needs of the region.
3. Identify, implement and disseminate best practices throughout the region, working towards a standardization of ICT competencies, skills, and training approaches.
4. Develop a fully articulated, comprehensive ICT education pathway and work to implement it throughout the region.
5. Expand and diversify the region's ICT workforce.
6. Enhance links to global ICT training providers and employers.

Most community colleges in the region have computer and networking education programs. However, most have been developed from scratch in each community, with tremendous duplication of effort. Each is different, with different uses of terminology, different packaging of knowledge and skills and differing levels of success in various common program goals. MPICT would be a Center for all of these programs.



Among common goals the Center could address are:

1. Regional Harmonization of Courses, Degrees, Terminology and Certifications – Work toward similar terminology, courses, degrees and certifications to improve the value of technical education and reduce confusion in the region.
2. ICT Standards – Work toward standards for knowledge, skills and competencies associated with certain terms.
3. ICT Proficiency – Everyone needs basic ICT skills and knowledge to participate in the modern world, like everyone needs basic math and English skills. Develop standards for basic ICT proficiency as graduation requirements and develop and delivery relevant courses and tests.

4. Coordinate & Facilitate Articulation and Transfer Relationships – Reducing duplication of efforts and improving educational pathways in the region.
5. Coordinate Communications with High School Counselors – Improving understanding and reducing confusion around career and educational pathways, terminology, degrees, certificates, transfer opportunities at the large number of different community colleges in the region, so high school advisors and counselors provide good advice to high school students.
6. Develop and Disseminate Strategies to Better Serve Underserved Populations – Every institution grapples with these issues. Let's work together to apply knowledge and strategies to serve all.
7. Develop Regional Meeting and Technology Showcase Facilities – At the center of the region, at a transportation hub, the San Francisco Center is an attractive location for representatives from associated institutions to meet and work on common issues. Industry partners have expressed interest in helping ICT training programs demonstrate and teach emerging technologies. They just can't afford to do it at each institution. The Center will facilitate technology showcases throughout the region.
8. Model Successful Partnerships and Cooperation Between Institution IT Departments and ICT Academic Departments – A big factor in ICONS success has been coordination and engagement between the college ITS department and its infrastructure and the academic department teaching ICT. The Center will facilitate development of similar relationships at associated institutions.
9. Global Knowledge & Best Practices Acquisition & Dissemination – America retains a myopic false impression that it still leads the world in information and communications technology and infrastructure. However, the US has fallen from 1<sup>st</sup> to 15<sup>th</sup> in "broadband" penetration in the past few years, and it is falling fast. Increasingly, best knowledge, experience and practices in ICT are abroad. Using well-recognized San Francisco and Silicon Valley names, MPICT would develop relationships with organizations and institutions abroad to bring knowledge back to benefit the region.
10. Recruitment and Marketing – Coordinate collateral, messaging, PR, recruiting event, high school outreach and other efforts to improve ICT program recruitment and retention.
11. Curriculum Development and Dissemination – Work together to make best courses and course modules available to all.
12. Use Collaboration Technologies, Networks & Resource Sharing – ICT educators are more apt to use ICT technologies for improved instruction, labs, distributed or distance learning, remote guest lecturers, digital content sharing, online courses, etc. MPICT will facilitate those efforts; for example, utilizing at multiple institutions equipment hosted at a single institution. Proving education technology solutions in ICT departments will speed adoption by other, less-ICT-friendly educators and departments, benefitting all students and institutions in the region.

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13. Coordinate Interaction and Input from Industry – Leverage and develop ICONS' Advisory Panel to serve associated programs in the region, rather than each having to develop its own relationships. Solicit input & interaction efficiently to serve all.
14. Faculty Training and Events – Leverage greater buying power across the region to more cost effectively arrange training and education for associated institution faculty and staff.
15. Coordinate Cisco Academy Relationships – Work to more efficiently engage with Cisco programs across the region.
16. Develop Job Placement, Internship, Mentoring and Service Learning Programs – Coordinating these activities across the region can lead to greater success for everyone.
17. Develop Regional, National and International Faculty and Student Exchange Opportunities – Adding cultural dimension to ICT education.

Obviously, it is not feasible for MPICT to do all of this at once well. However, MPICT will lead interested associated programs in prioritizing regional goals and working together to leverage individual efforts in the region for maximum benefit for.

The MPICT Center grant proposal was submitted this Fall. Additional work to develop and obtain approval for the grant is expected throughout the Spring and Summer, with notice of award expected in the Fall of 2008.

Fingers crossed, and many thanks to Elissa Rassen in the grants department!



## Happy Holidays and Best Wishes

From the ICONS team to all of you  
For a safe, happy and wonderful winter holiday  
And an outstanding and rewarding 2008!

Thank you for supporting ICONS!



## CNIT Instructor Featured by CompTIA

This quarter, CompTIA published an article entitled: "*Abigail Bornstein Shares Her Experience as an IT Instructor.*" Abigail is a CNIT instructor at City College of San Francisco and an active contributor to ICONS' efforts.



Abigail shares her extensive CNIT knowledge and experiences with CNIT students, teaching basic computer concepts, Microsoft Office, CompTIA A+ courses, internet technologies, and HTML. She also provides valuable insight, perspective and efforts to CNIT and ICONS in helping the department become more proficient in appealing to women and in developing and delivering communication and teaching strategies and styles that appeal to women.

The article can be found at: [http://www.comptia.org/pressroom/get\\_articles.aspx?prid=181](http://www.comptia.org/pressroom/get_articles.aspx?prid=181)

## ICONS Cultivates International Relationships

Last summer, ICONS PI and CCSF Network Manager, Tim Ryan, traveled to Europe to study network infrastructure and ICT instruction for ICONS. His travels took him to Sweden, France and Holland, where he met with industry experts and technical educators. This quarter, ICONS pursued two of the relationships he initiated.

In October, two educators from ROC ASA ICT Academy ([www.rocasa.nl](http://www.rocasa.nl)) in Amsterdam, Holland visited CNIT/ICONS. Their trip involved study of how we teach and are organized, becoming familiar with our many ICT industry relationships and exploring together ideas on possible collaborations between our institutions. We facilitated a variety of industry visits for them in the area. One was an ICONS event co-sponsored with the San Francisco IEEE Communications Society and the Institute for Next Generation Internet (INGI) at SFSU, which featured Esme Vos of MuniWireless.com (who lives half the year in Holland) speaking on the state of municipal wireless.

This quarter, we also worked to develop a relationship, in San Francisco's international sister city, Paris, France, with Centre des Formations Industrielles (CFI) Gambetta (<http://www.cfi.ccip.fr/cadre.asp?rubrique=2011>). Following phone calls and correspondence, we participated in a Telepresence conference, 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. Those efforts are resulting in a collaboration in the Spring 2008 semester, in which Cisco Academy students in Paris and in San Francisco will work together on class projects utilizing and involving information and communications technology.

HOLLAND

Paris