

August 01, 2007

STE Update : 08/2007

Northeastern University

Recommended Citation

Northeastern University, "STE Update : 08/2007" (2007). *STE Update*. Paper 3. <http://hdl.handle.net/2047/d20000192>

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Higher Learning. Richer Experience.

School of **TECHNOLOGICAL ENTREPRENEURSHIP**

STE Update

August 2007

moving **technology** from **idea** to **reality**

Letter from the Dean

Dear Alumni and Friends,

What is the best way to teach entrepreneurs how to create and run successful companies? In the STE, we think the answer involves leveraging Northeastern's traditional strength in experiential learning. We believe the approach has to include direct involvement in an entrepreneurial activity. And further, we are striving to create a program that provides that experience to our students while they are on campus.

We started by creating a unique curriculum at the undergraduate and graduate levels. We then engaged students in projects that focus on emerging technologies and ideas. Our students are involved in evaluating both the technological aspects as well as the business potential of these ideas.

During the past year we learned how this could work through the Digital Media I-cubator. Undergraduate and graduate students worked together to create something bigger than what they were given at the start. The result was a demonstration of a hyper local social website that the students presented to several investors that was impressive. The excitement exhibited by our students was our reward.

This academic year, we will build on last year's successes by expanding and improving our program. We will develop two new graduate level degree programs to be rolled out next year (Fall '08). Leveraging our unique advantage, we will endeavor to integrate the experiential and education components of our program. We therefore plan to expand the involvement of I-cubators both by increasing their number and by adding new and interesting projects. We also plan to fold in ancillary activities such as a technologically focused entrepreneurship forum and a similarly focused business competition.

We are anxious to get going and looking forward to a great new academic year.



Undergraduate Program

The undergraduate program continues to grow. The spring semester seems to draw the most students, but as you can see in Figure 1, the numbers increase with each new spring semester. This summer, we have the same number of students enrolled as last. The total number of undergraduates participating in the minor is 248. Their distribution among colleges is shown in Figure 2. Clearly, engineering dominates with the second greatest number coming from business.

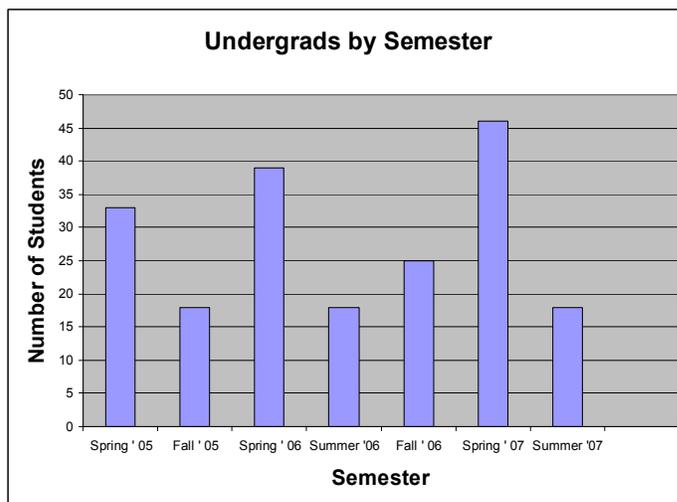


Figure 1. Chart of undergraduate student number enrolled in the minor by semester.

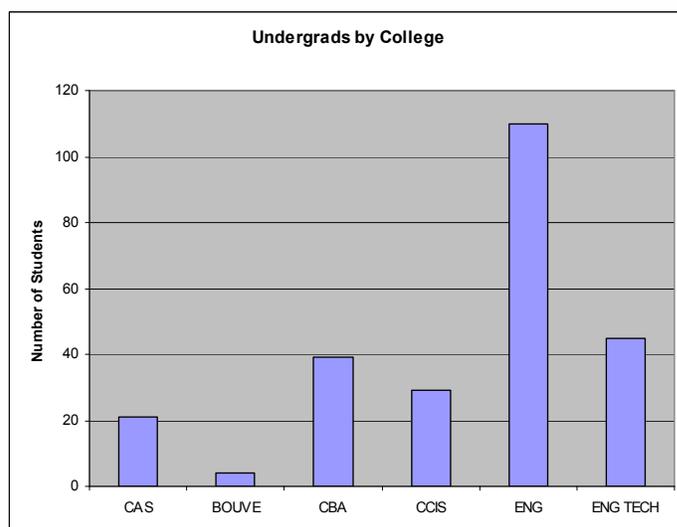


Figure 2. Number of students enrolled in the program since the outset.



Graduate Program

Class of '07

We have a great initial group of students in our first graduate class. One member of the class organized a Student Advisory Board to help the Dean with suggestions for improvements to the school, its programs, and the services it provides. This group is currently working on a graduate student handbook which will have information for incoming students about the ins and outs of the STE and NU.

One of our graduate students has shown what can be accomplished while in our one year graduate program. Sam Ruback, who is a recipient of a Kariotis Scholarship, came in with an idea for a product he called '2Hot.' According to Sam, "2Hot is a sink faucet attachment that measures tap water temperature and alerts the user at dangerous temperatures through a flashing light and audio alarm. 2Hot will fit on most faucets by using universal faucet screw adapters covering 95% of the market. 2Hot is designed to be effective in the normal kitchen and bathroom sink environment. 2Hot has a compact size for small bathroom sinks and tight kitchens."

Sam has aggressively and persistently pursued his project throughout the program despite encountering many stumbling blocks. One of the impressive things Sam did was to seek out assistance from undergraduate students at Northeastern and at Mass College of Art. Sam created job descriptions which were posted on the STE website, sought help from faculty in the electrical and mechanical engineering departments and engaged undergraduate students in his project, having them complete both the mechanical and electrical designs for his project. In addition, using linkages established between the STE and Mass Art, Sam enlisted students from the industrial design program. In Figure 3 below, some of the initial models for 2Hot are shown.

Other students had similar successes. Yeliz Ozkaraoglu worked with Professor Daniel Burkey (Chemical Engineering) to deposit layers of super absorbent polymer on cloth to demonstrate the feasibility of creating clothing that draws perspiration away from the body to help keep people cool and dry.

Yeliz's project was one among three chosen for business plan development this summer semester.

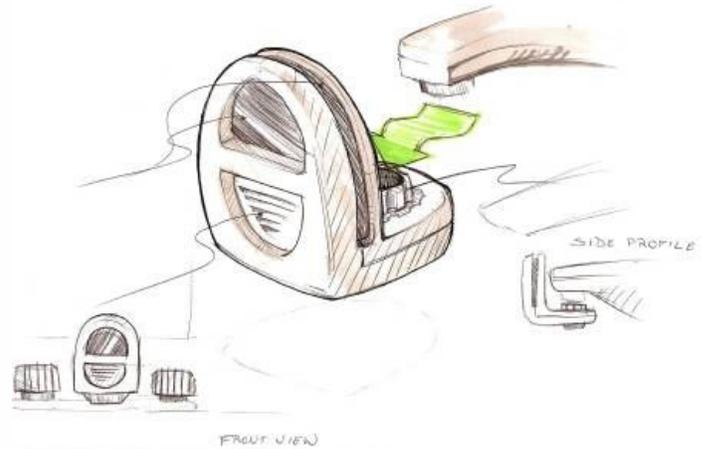


Figure 3. The top drawing shows a design sketch of one of the concepts considered. The photos below show two of the physical models created.

Tim Chadwick is developing a web tool he calls Site MapMap. This is a software product that examines a website, evaluates the links and creates a visual representation of the entire site making it easier to navigate. Pages are represented by elliptical nodes, and links as curved Bezier lines. The information contributing to pages and links is generated by a web spider, which consumes a site and generates information about each page including title or keyword meta-tags. After the domain is consumed, graph generating technology is used to create the data necessary to plot and render page-nodes and draw line-links.

During the last summer semester, teams formed around each of these projects and worked together to write business plans and create power point presentations. Angel investors Joseph Caruso['65 BSEE], Sam Altschuler ['58 MBA] and John Martino volunteered to listen to the presentations and provide



feedback to the teams. The photos below provide a visual flavor for the event.



Figure 4. From right to left; John Martino (judge), Sam Altschuler (judge), Tom Cullinane (faculty), Joe Caruso (judge) and Dean Zavracky.



Figure 5. Graduate Students Tim Chadwick, Sam Ruback and Yeliz Ozkaraoglu present plans.



Figure 6. After the presentations, each of the judges left the classroom and met with the teams for a review of their presentation. Above, Joe Caruso meets with Tim Chadwick, Brandon Kwok and Justin Lieder.

Class of '08

After a successful campaign to promote our graduate program in an effort to attract more students, we have

been rewarded. Last years ten full time graduate students will be replaced by twenty two full time graduate students this year. About half of the new graduate class are international students. Three students hale from NU's undergraduate programs. All but two students have technical backgrounds with the two having finance and management degrees. Most of the students are recent graduates, but three have significant experience (>10 years).

Graduate Curriculum Development

As I mentioned in the prior note, this first class is truly exceptional. The make-up of the graduate students was much younger than we anticipated and our course offerings were designed for an older group. We therefore are spending considerable effort this summer in adjusting the existing graduate curriculum to match this student demographic.

We are also planning additional course offerings that will reach out to other groups and expand the program. Among these new offerings are a combined MS/MBA program that will attract students interested in the MBA program who also want to have a more concentrated view of the special considerations given to entrepreneurship in high technology businesses. Creating a formal degree program enhances the visibility of the STE, strengthens our ties with the College of business and draws more students into our classrooms. The degree is intended to be offered in '08.

To reach a more seasoned audience, we are planning an on-line program in concert with the School of Professional and Continuing Studies. It's our intent to maintain a high standard in any on-line offering, by insuring that a majority of courses are taught by full-time faculty, that the tuition be equivalent to the full time day program, and that even though these students may be remote, the experiential component remains.

I-Cubators

Our first I-cubator, directed by Dan Gregory has been a great learning experience with plenty of reward both for the STE faculty, administrators, and the students. Now, armed with experience, we've initiated a second I-cubator that focuses on software engineering. An



alumnus of the College of Engineering, Tom Ermolovich (BSEE '71), has signed on as its Director. Tom has been working with the center for information assurance (a collaborative group from computer science and electrical engineering). As the I-cubator model matures, we'll continue to adapt our approach to meet the needs of the University.

Digital Media I-cubator

Dan Gregory began work in the Digital Media I-cubator in October. The bulk of his time was devoted to Pulse Point, an online social networking product. Dan coordinated work between STE and the College of Arts and Sciences, where Pulse Point was the focus of a year-long capstone project in the Multimedia Studies program. The I-cubator arranged meeting with venture capital firms and angels in May, providing students with a unique educational opportunity to present to investors who gave their project serious consideration. Projects in the music industry, games, and in disaster preparedness and response will be coming on line in the 2007/8 year.

Software Engineering I-cubator

Alumnus Tom Ermolovich['71 BSEE] started working with us about one half year ago. He began exploring the I-cubator concept helping to further develop its definition and implementation. Among the changes that we are considering is to broaden the scope of I-cubators such that they can stand alone as separate 'centers.'

Two projects are under development in the Software Engineering I-cubator. The first is an educational maze game that is the invention of Don O'Malley, professor of Biology at Northeastern. This is an education game that improves learning through a process that involves navigating through a maze by answering questions correctly. The second project is based on technology under development in the Center for Information Assurance headed by Agnes Chen (Professor of Computer Science) and David Kaeli (Professor of Electrical and Computer Engineering). We believe the project has real legs and has attracted the interest of Aviram Cohen, formally of EMC. Aviram is a novice entrepreneur and is being mentored by the STE team. He has incorporated the

company (NUIC) using the services of Foley-Hoag, a partner in many of the STE activities.

Angel Group

Initial discussions are underway. This activity is being headed by the Dean, Joe Caruso ['65 BSEE] (Chair, Common Angels) and Homayoun Taleih ['82 BSEE] (CEO, SoloPower). The first objective of this group is to evaluate the feasibility of creating the Husky Angels whose strategy would be to invest capital in opportunities that promise a significant return on investment. Among the issues being considered is the extent to which Husky Angels would be committed to NU IP.

Staffing

In addition to adding a second I-cubator Director, we have filled a new junior faculty position. For this assistant level, tenure track position we hired Dr. Tucker Marion. Tucker Marion graduated Bucknell University with a degree in Mechanical Engineering; then spent the next seven years at Ford Motor Company and Visteon Corporation launching new automotive electronics. During that time he completed a Masters at the University of Pennsylvania and Wharton School in Technology Management. In 2001, he co-founded the Innovation Factory (www.innovationfactory.com), where he headed product development and operations. He left the Innovation Factory in 2004 to begin FlashPoint Development (www.flashpointdevelopment.com), a small product development consulting firm based in Philadelphia. Tucker began Ph.D. work at Penn State in late 2004, and upon completion in early 2007 he was enlisted by the School of Technological Entrepreneurship where he will teach and continue his research in product development and innovation.

We are continuing our search for a candidate to fill the Shillman Chair. Two candidates have been selected for the final process which involves arms length review letters from leaders in the field.

An unanticipated outcome from the Shillman search is the knowledge gained in communicating with the academic leaders in the emerging field of technological entrepreneurship. There is an apparent awareness of Northeastern's bold move in creating an



independent school of technological entrepreneurship. With it comes a responsibility for us to make the new school extraordinary.

External Activities

EntreTech Forum

The EntreTech Forum is being launched this Fall with a regular schedule of monthly meetings. Each will feature a moderated panel providing technology-innovation presentations. These will focus on entrepreneurial and corporate accomplishments along commercialization pathways with discussions of technology transfer and incubation from universities and industry. The subject of financing and deal structure will be included along with presentations of emerging academic research. The open meetings will be held in Waltham at the Emerging Enterprise Center of Foley Hoag and at campus locations.

The EntreTech Forum will be an affiliate of Northeastern University's School of Technological Entrepreneurship (STE) and will be directed by an executive board of business principals, investors, and researchers.

The Forum will serve entrepreneurs and investors, commercial-industry and academic communities, inventors and technology researchers within a framework of technology-market collaboration and networking. In addition, a brand recognition and community visibility will accrue to the School of Technological Entrepreneurship

A Working Group/Leadership Team is being formed now to help organize the forum events. Larry Grumer ['74 BSME, '85 MBA] a Northeastern University alumnus and entrepreneur has agreed to direct the organizing activities and lead the execution. The Leadership Team's participation will take the form of working on and leading committees such as Alliances, Programs, Communications, Industry Liaison, Meeting Logistics, etc. and become the governing board of the forum.

The EntreTech Forum meetings are going to be held on the third Tuesday of each month 6:30-9:30pm at the Emerging Enterprise Center at Foley Hoag Suite Number: 4000, North Entrance 1000 Winter Street Bay Colony Corporate Center Waltham, MA 02451.

On-campus special-event meetings are planned to be held at the new Northeastern University Alumni Center. The first meeting is scheduled for October. Please attend.

Business Plan Competition

The Deans and faculty of the School of Technological Entrepreneurship and the College of Business Administration plan to re-energize and restructure the original, but dormant, Northeastern University \$60K business plan competition.

To get the ball rolling, we engaged a visiting scholar here for the summer. Larry Bennett, who is the Whitman Professor of Entrepreneurial Practice at Syracuse University, formulated our approach.

The new model for the "Northeastern \$120K Venture Creation Competition" will revolve around identifying high growth new businesses from among the NU alumni, faculty, student body, as well as other aspiring entrepreneurs from around the world.

Differentiators for the "Northeastern \$120K Venture Creation Competition" include:

- Focus on commercially viable and sustainable businesses from applicants
- Focus on NU alumni and faculty as primary conduits to realistic, sustainable high growth ventures - NU student applicants will be accepted; however, the focus is on "real deal," high growth ventures, not a "plan" competition as an academic exercise
- Size of prize monies
- Distribution of prize monies, e.g. monies distributed over a period of time as a structured seed phase approach
- Validation of interest by venture capitalists at early stages of application
- Integration of student support teams for applicants, when and where viable

Our current plan is to begin soliciting plans in the first quarter of '08, and to hold the first competition in the Fall of '08.



Alumni/ae Opportunities

We depend on the support of Northeastern's alumni/ae. Please give some thought to the following areas of interest and need:

- 1) Help identify and direct students to the Master's program.
- 2) We are seeking entrepreneurs between opportunities who may be interested in working with student teams, NU faculty and NU ideas or their own to launch new companies.
- 3) We are looking for an expression of interest in participation with the Husky Angels.
- 4) We are looking for industrial partnerships for our I-Cubators in the areas of Digital Media and Software Engineering. Connections to firms that might have an interest in seeing ideas vetted by student teams will be very important to the success of the program. As a note, this year we are working with two small companies.
- 5) Volunteers for any activity. There is a lot to be done with a very few people. If you would like to be involved, we can certainly find something that will be interesting for you.

Things of Note

To get more information about the STE, visit www.ste.neu.edu.