



NCIIA ANNUAL REPORT

2007-08

From the Executive Director

I am pleased to present the National Collegiate Inventors and Innovators Alliance (NCIIA) report for 2007/08.

This was a successful and exciting year for the NCIIA—our first as an independent entity.

In 2007/08, we worked toward establishing the systems and procedures needed to operate independently. We continued to grow and enhance our suite of technology entrepreneurship programs—particularly in venture development—by developing an investment program (Venture Well) and securing grants to enable continued expansion of our Invention to Venture workshop series.

We saw continued improvement in the quality of grant proposals from our faculty in each of our grant programs. A Sustainable Vision workshop, held at the start of our Annual Conference in Dallas in March, helped develop a strong community around this important new grants program.

During this year, we:

- Awarded \$1.4 million, via a total of 55 grants, to faculty through the Course and Programs, Advanced E-Team, and Sustainable Vision grants programs.
- Saw impressive results from our grantees: the institutionalization of new courses in entrepreneurship; the launch of businesses from student ventures and the issuing of new patents and licenses for technologies; more partnerships with overseas universities; and an increased interest by faculty in the development of projects with positive social outcomes.
- Engaged more than 2,300 participants around the country through our Invention to Venture (I2V) workshop series.
- Completed early stage development of Venture Well, our new investment and venture development program, which will fund promising student ventures that have clear social and environmental benefits.
- Presented several successful outreach events: the 12th Annual Meeting and March Madness of the Mind E-Team showcase, and the BMEidea Competition, leading to new ideas and alliances.
- Developed a partnership with the Myers Memorial Trust to expand the I2V program in Oregon, and two grants from the National Science Foundation for research on evaluation and assessment of entrepreneurship education.

I thank our board members, who have guided the organization with expertise. I would like to commend the staff of NCIIA for their professionalism and energy during the year.

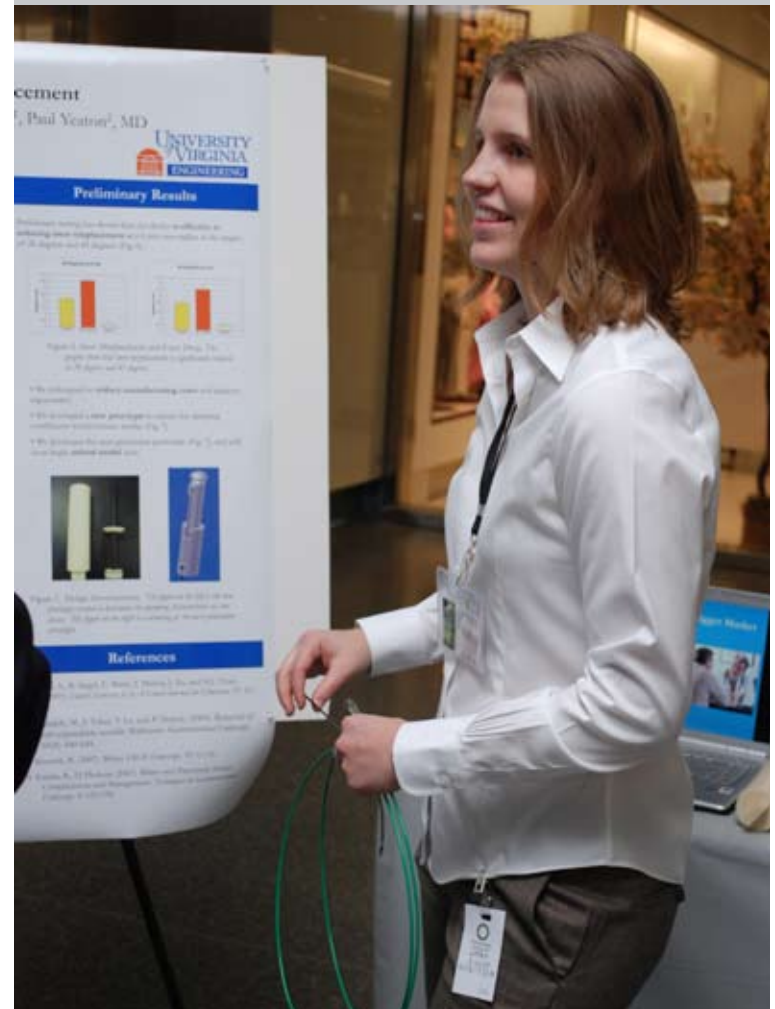
I am pleased to share with you this report of NCIIA's first full year of independent operations, and look forward an equally exciting future!



Phil Weilerstein, Executive Director
May 2009

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About the NCIIA

The National Collegiate Inventors and Innovators Alliance was established in 1995 with support from The Lemelson Foundation, the legacy of inventor Jerome Lemelson (1923-1997) and his family. Lemelson believed that teaching invention, innovation and entrepreneurship to young people is the most effective way to bring forth the next generation of innovators—generating new products, creating employment opportunities, strengthening the national economy, and developing solutions to pressing global problems.

The NCIIA, founded to support and encourage invention, innovation and entrepreneurship education at institutions of higher learning throughout the United States, offers grants for curricular development, supports E-Teams ("E" is for excellence and entrepreneurship), multidisciplinary teams of students, faculty and industry mentors.

The NCIIA works with colleges and universities to create commercially viable and socially beneficial businesses and employment opportunities, and to bring ideas to practice through entrepreneurial efforts in the United States and around the world.



In 2007-08, the NCIIA:

- awarded a total of fifty-five grants to member institutions through the Course and Program, Advanced E-Team and Sustainable Vision grants programs;
- engaged more than 2,300 participants around the country through the Invention to Venture workshop series;
- began early stage development of Venture Well, a new commercialization program that will fund promising student ventures with clear social and environmental benefits;
- created a fertile environment and opportunities to extend networks for students and faculty through: the 12th Annual Meeting, and the BMEidea Competition.
- secured support from the Meyer Memorial Trust to expand the I2V program in Oregon;
- received funding from the National Science Foundation for research on the assessment of engineering entrepreneurship education; and
- recognized four outstanding educators for excellence and innovation in higher education as part of the Olympus Innovation Awards program.

FY 2008 by the numbers:

- **Twenty-one** Course and Program grants awarded (\$534,612)
- **Twenty-four** Advanced E-Team grants awarded (\$384,392)
- **Ten** Sustainable Vision grants awarded (\$481,074)
- **\$1,410,078** total grants awarded in these three categories.
- **100%** of the twenty-four Advanced E-Team grants awarded have clear social or environmental benefits
- At least **eleven** companies derived from NCIIA grant-funded E-Teams
- At least **ten** patents secured by NCIIA E-Teams
- More than **\$42 million** in financing acquired by NCIIA E-Teams in 2007-08
- Approximately **198** institutions engaged through our funding programs With support from The Lemelson Foundation, the NCIIA awards grants to its member institutions to support and strengthen invention, innovation, and entrepreneurship education through curricular development and the work of Advanced E-Teams.

2007-08

NCIIA Grants Awarded

Course and Program Grants **21**

Advanced E-Team Grants **24**

Sustainable Vision Grants **10**

NCIIA Grants **Course&Program**

Course and Program grants are awarded to faculty and staff at colleges and universities to help improve existing curricular programs or build new programs in invention, innovation, and entrepreneurship. Course and Program grants support creative, experimental pedagogy that generates E-Teams, bringing real life applications into the classroom setting and beyond.

During 2007-08, the NCIIA awarded twenty-one Course and Program grants to faculty. The grants included single and multi-year grants to create and improve courses and programs in entrepreneurship and innovation.

Previous grantees have reported institutionalization of entrepreneurship education opportunities, including permanent course offerings, new minors, and new certificate programs, and the expansion of existing opportunities to engage new groups of students and faculty.

Among some of the new grant-funded developments, the Pennsylvania State University reported the approval of a new "Community Service Engineering" certificate program, the University of Central Florida approved a new Technology Entrepreneurship minor, and the University of California, Berkeley institutionalized a freshman course "Engineering Design and Analysis," which will be required for most engineering majors.

In addition, grantees reported several new student ventures that formed directly through NCIIA-funded courses and programs. Student companies included SensorTech, Inc., started by a doctoral student at Clemson who enrolled in an NCIIA-funded course and invented a contact sensing technology. In addition, two Stanford University E-Teams formed companies (Simpirica Spine and Spiracur) based on inventions developed in the NCIIA-funded Biodesign Innovation course in 2007. Both successfully licensed their inventions from Stanford and have received venture funding.

Featured Course and Program Grants, 2007-08

Innovating from Life: Exploring Biomimicry-based Solutions to Human Healthcare Problems

Arizona State University, 2008

\$33,000

With this grant, ASU faculty is introducing the concept of biomimicry to students in the school's InnovationSpace program. Biomimicry is a methodology of innovation that looks to the forms, materials, and functions of nature for clues to solving design and engineering problems. Students in the program will be introduced to biomimicry as a methodology for creating innovative and environmentally sustainable solutions to healthcare problems.

Global Healthcare Technologies Program Northwestern University

\$46,000

The Global Healthcare Technologies Program in the McCormick School of Engineering at Northwestern University is an intensive course in which students work with front-line healthcare workers to design medical devices specifically for the developing world. Ongoing projects include affordable digital radiology, inexpensive apnea monitoring for premature infants in areas with limited neonatal care, and a tuberculosis tracking system.



A Multi-disciplinary, Multi-level Innovation-team Course

North Dakota State University

\$9,000

This project supports a course focused on micro-manufacturing innovation in the field of medical and dental products. The course could be expanded to become a compilation of offerings with different technological emphases, within an innovation-centered context. All the resulting courses will be open to students majoring in any subject relevant to the topic of the innovation, and would also be made available to students attending NDSU's global partner institutions and students within the Tri-college network in the region. The intention of the project is to create an enabling and sustainable framework for innovation teams to secure resources through partnerships with industrial organizations and private entrepreneurs, as well as through grants from governmental and foundation resources.

Beyond Design for the Environment: Improving Products, Processes and Actions

University of Pittsburgh

\$36,130

Design for the Environment (DfE) is a specific set of design practices aimed at creating eco-efficient products and processes. Having recently begun to develop and teach a handful of sustainability courses, University of Pittsburgh faculty have recently been given the task of forming the Department of Civil and Environmental Engineering's Sustainability and Green Design Group (SGD).

With this grant, Pitt faculty will develop a new semester-long DfE course aimed at introducing students to DfE tools, real world industry sustainability challenges, and lab experiences. The course will culminate in the judging of multidisciplinary student team business plans and proposed projects. Winning teams will be granted summer residencies, a two-month period in which they will implement their project and create a prototype. Teams will partner with local green organizations and industries who will serve as potential sites and resources to other companies interested in participating in the course. The teams will also present the results of their projects at the Student Industrial Ecology Conference.

Enabling Student innovation in Biomedical Engineering- A Graduate Level Innovative Design Class

University of Michigan Ann Arbor

\$36,500

This grant will help expand a pilot program in a graduate-level biomedical engineering course by offering additional resources to design teams: equipment, materials, supplies, prototyping funds, and expert lecturers and consultants. During this year-long class, students are responsible for idea generation, prototype development and commercialization planning. Students are exposed to an entrepreneurial environment and gain entrepreneurial skills not traditionally integrated into university coursework.



Course and Program Grants Awarded 2007-08

- **Enabling Student Innovation in a Graduate Level Biomedical Innovative Design Class**
University of Michigan
\$36,500
- **Program for International Energy Technologies (PIET)**
University of California, Davis
\$47,500
- **E-Team Workshop Series and Phase 0 Seed Fund Program**
Louisiana State University
\$22,500
- **A Multi-disciplinary, Multi-level Innovation-team Course**
North Dakota State University
\$9,000
- **Global Healthcare Technologies Program**
Northwestern University
\$46,000
- **Development of a Multi-Disciplinary New Product Development Course**
Northeastern University
\$29,000
- **Social and Sustainable Entrepreneurship**
Rowan University
\$6,000
- **Innovation and Commercialization in a New Robotics Technology Product Design Platform**
Worcester Polytechnic Institute
\$7,000
- **The Four Directions Program**
Arizona State University
\$35,135
- **Entrepreneurship Engineering Education Program**
Mercer University
\$7,000
- **Beyond Design for the Environment: Improving Products, Processes, and Actions**
University of Pittsburgh
\$36,130

- **Visualization in Design and Entrepreneurial Endeavors**
Rensselaer Polytechnic Institute
\$6,500
- **Sustainable Innovations for Tomorrow's Social Entrepreneurs**
Portland State University
\$33,200
- **Project Innovation**
University of Maine
\$23,300
- **Entrepreneurship: Where Art Meets Engineering**
Springfield Technical Community College
\$29,500
- **Software Innovation and Social Entrepreneurship**
University of California, Santa Cruz
\$33,000
- **Innovating from Life: Exploring Biomimicry-based Solutions to Human Healthcare Problems**
Arizona State University
\$33,000
- **Product & Market Development for Subsistence Marketplaces**
University of Illinois at Urbana-Champaign
\$21,500
- **Capstone Course For An Emerging entrepreneurship program**
Embry-Riddle Aeronautical University
\$6,500
- **Eco-Innovating a Better World**
Michigan Technological University
\$6,500
- **Product Development and Innovation**
Western New England College
\$24,000



Advanced E-Team Update

Microolution: Thinking small

\$18,590, University of Illinois at Urbana-Champaign, 2006

Micro-manufacturing (the production of components with feature sizes smaller than 1mm) is a large and rapidly growing manufacturing sector. Micro-manufacturing machines make parts for both high-volume (iPods, cell phones, etc.) and high-value (surgical devices, military components, etc.) products, but in both cases the machines currently on the market are slow, expensive, large, and difficult to use.

This E-Team, now incorporated as Microolution, developed a new type of machine, called a Micro/meso-scale machine tool (mMT), which is smaller, less expensive, and less complex than traditional micro-manufacturing machines.

Microolution began selling its first product, a milling machine with two-micrometer positioning accuracy called the 310-S, in 2007. The 310-S was also covered in a number of manufacturing oriented publications, including *Manufacturing Engineering*, *Cutting Tool Engineering* and *Medical Design* magazine.



An E-Team is a multidisciplinary group of students, faculty, and industry mentors who are working together to develop a technological innovation into a business, operating from within an academic institution. The "E" stands for **excellence** and **entrepreneurship**.

Advanced E-Team grants support student teams who seek to bring innovative products to market by providing funding to move innovative ideas or designs to the prototype stage. The grants also help E-Teams secure intellectual property.

In 2007-08, the NCIIA awarded twenty-one Advanced E-Team grants, involving approximately one hundred students.

Highlights this year included eleven new companies launched, three new patents issued and three new technologies licensed. At least twenty-seven current and former Advanced E-Teams raised over \$42 million in capital in 2007 and the first half of 2008 from competitions and awards, investments, and grants.

For example, one 2006 grantee recently reported co-founding **Endoluminal Sciences**, a start-up venture that will develop a device to prevent abdominal aortic aneurysms. They received \$2 million in backing from GBS Venture Partners in Melbourne. The company's is planning and conducting the testing to prove the technology to a pre-clinical phase.

A 2007 grantee, **Ecovative Design LLC** from Rensselaer Polytechnic Institute, won multiple business plan competitions, including a \$10K prize at the Global Social Ventures competition and a \$500K funding package from the NY State Economic Development Agency. The company received international acclaim and €500K when it won the "Green Ideas" competition in Amsterdam. Ecovative is located in an incubator at RPI and is using its unique biotechnology to produce environmentally friendly packaging and insulation.

Featured Advanced E-Team Grantees 2007-08

Buzby Networks

Pennsylvania State University

\$18,000

The Buzby team is developing wireless sensor network technologies for healthcare environments such as hospitals and nursing homes. A number of problems occur in healthcare facilities due to a lack of timely information; for example, locating patients and basic medical equipment in an emergency in nursing homes can be a challenge. In response, Buzby is developing a system that allows accurate, real time location tracking of both patients and equipment with small, low-power devices. The team has begun to develop relationships with local Pennsylvania nursing homes.

The team is developing these prototypes using ZigBee® technology, the rapidly developing suite of wireless communication protocols that facilitate low-power, simple, and reliable wireless communication. The team is advised by a group of former Penn State students whose sold their E-Team-based company.

Low Cost Ventilator

Stanford University

\$19,000

This E-Team is developing a low-cost ventilator for two distinct purposes: emergency readiness in developed countries and general use in developing countries. The state of preparedness of the US healthcare system for an influenza epidemic has been recently assessed, and it was determined that the nation's hospitals will not have enough ventilators to meet the anticipated demand (more than 740,000 would be needed; the US has 105,000). Meanwhile, in developing countries, millions die each year from lack of access to a common ventilator. To fill the need in both cases, the team is developing a low-cost (\$300, where typical ventilators range from \$8,000-\$60,000), rechargeable, portable, disposable ventilator.



Gallbladder Stent Insertion Regulator

University of Virginia

\$15,200

Approximately 40,000 patients per year who suffer from pancreatico-biliary disease receive Self-Expanding Metal Stents (SEMS) to alleviate pain. The SEMS insertion procedure can be complicated, and the stent can be easily misplaced, leading to infection, morbidity, and hospital admission.

This E-Team is developing a device to help make SEMS procedures easier. The device is an after-market addition to the existing SEMS catheter that acts like a shock absorber, slowing any sudden increases in insertion speed and giving the technician enough time to retract the inner catheter before SEMS misplacement occurs.

Digital Maze Games

Northeastern University
\$15,900

The Digital Maze (DM) is a software game that challenges students with multiple-choice questions in order to discover the maze exit. DM can be used in class or for homework and can be applied to disciplines as diverse as medicine, law and science.

The team believes that current games rely too heavily on repetition and memorization, while DM relies on a more cognitive learning process, creating a more intense gaming environment. The team sees the game as a textbook supplement targeted to college professors, textbook authors and academic publishers.

Removing Arsenic from Contaminated Drinking Water in Rural Bangladesh

University of California, Berkeley, 2008
\$20,000

In Bangladesh, naturally occurring arsenic poisons shallow drinking wells, exposing 30-70 million Bangladeshis to dangerously high levels of the damaging toxin—perhaps the largest mass poisoning in human history. To combat the problem, this E-Team is developing ARUBA (Arsenic Removal Using Bottom Ash), a simple technology that effectively and affordably removes arsenic from drinking water. The team is partnered with the Bangladesh Rural Advancement Committee (BRAC), the largest NGO in Bangladesh.



Porous Concrete Water Filtration: New Technology for Developing Countries

The University of Alabama in Tuscaloosa, 2008
\$19,400

Over one billion people in the world lack access to safe drinking water. Point-of-use (POU) drinking water treatment technologies have the potential to provide clean drinking water for those without, but are limited in their use in developing nations by their high cost, low durability, microbiological effectiveness, maintenance, and general usability. One promising technology is porous ceramic filtration, which provides an effective barrier against microbial pathogens in water and has recorded significant health gains in users versus non-users. The filter is, however, susceptible to breakage over time (2% per month in a normal household), is expensive to make where fuel to fire the kilns is scarce, and isn't feasible where clay isn't locally available.

This E-Team aims to build on the success of ceramic filtration by substituting the porous ceramic filter body with porous concrete, a more durable, more widely available, and less energy-intensive product.

Selected E-Team-based Companies formed in 07-08

- Endoluminal Sciences
Stanford Univ
- i-conserve (sold to competitor)
Penn State Univ
- SensorTech, Inc.
Clemson Univ
- InSite Medical Technologies
Stanford Univ
- Greenlight Planet, Inc.
Univ of IL at Urbana-Champaign
- Intelligent Mobility International
CalTech
- Ecovative Design, LLC
RPI
- Condition Engineering, Inc.
UMass Amherst
- Whole Tree
Baylor Univ
- Therapeutic Systems, LLC
UMass Amherst
- Promethean Power and Solar Turbine Group

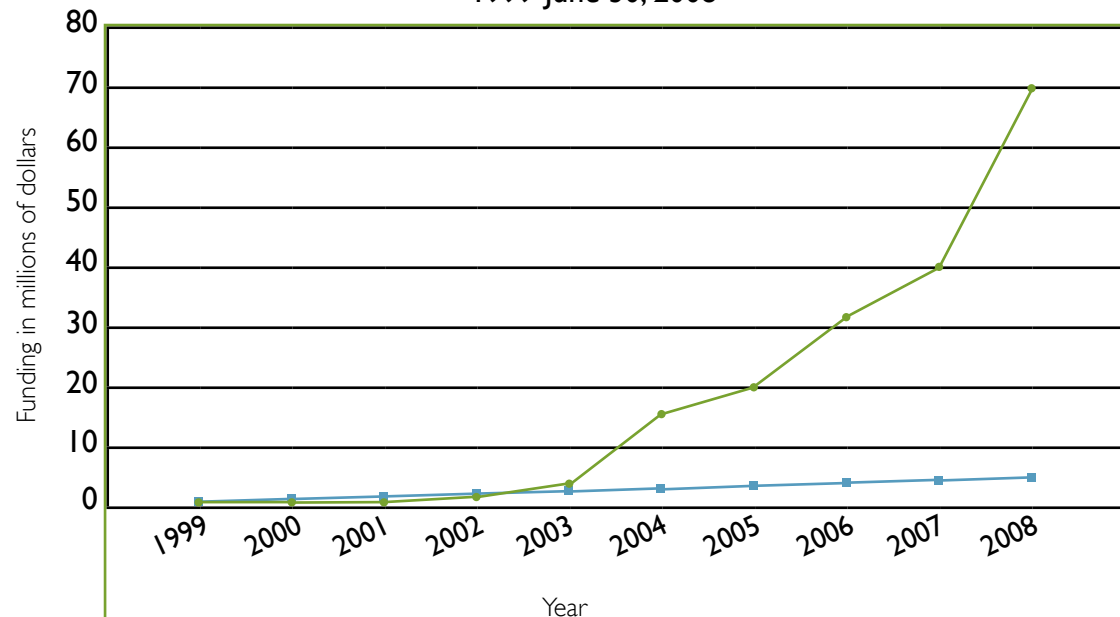
Advanced E-Team Grants Awarded 2007-08

- **Endurance Rhythm**
Stanford University
\$16,700
- **Solar Lighting Systems for Remote Rural Communities**
The Cooper Union
\$18,500
- **The Negative Xray Rapid System**
Johns Hopkins University
\$16,500
- **Uterine Atony Device Design Team**
University of Virginia
\$5,700
- **Malawi Water Cycle**
Washington State University
\$18,000
- **NovaPatch**
University of Michigan
\$16,710
- **Gallbladder Stent Insertion Regulator**
University of Virginia
\$15,200
- **Dizziness Diagnostic Device (D3)**
Johns Hopkins University
\$17,000
- **Enabling Solar Disinfection of Turbid Water by the World's Rural Poor**
Illinois Institute of Technology
\$6,000
- **PneumoCheck**
Georgia Institute of Technology
\$18,500
- **Low Cost Ventilator for Use in Developing Nations and Large Scale Disasters**
Stanford University
\$19,000
- **Disposable Robot De-mining**
Rensselaer Polytechnic Institute
\$13,420

- **Small Engines Enterprise**
Colorado State University
\$15,300
- **Portable Negative Pressure Ventilation Device**
Johns Hopkins University
\$17,562
- **Digital Maze Games**
Northeastern University
\$15,900
- **Removing Arsenic from Contaminated Drinking Water in Rural Bangladesh**
University of California, Berkeley
\$20,000
- **Therapeutic Systems**
University of Massachusetts Amherst
\$16,500
- **Real-Time, High-Accuracy 3D Imaging System**
Catholic University of America
\$14,500
- **A Novel, Robust Device to Prevent Fetal Death During Labor & Delivery**
Stanford University
\$20,000
- **Shoe Life Monitor**
Babson College
\$14,100
- **Enhanced Bio-morphic Helmet**
Michigan Technological University
\$15,500
- **Buzby Networks**
Pennsylvania State University
\$18,000
- **Porous Concrete Water Filtration: New Technology for Developing Countries**
University of Alabama in Tuscaloosa
\$19,400
- **Community Assessment of Renewable Energy and Sustainability**
University of California, Berkeley
\$16,000



Advanced E-Team Leverage:
NCIIA Funding and External Funding Obtained by Grantees
in millions of dollars
1999-June 30, 2008



— Funds awarded by the NCIIA
— External funds leveraged by NCIIA grantees

NCIIA Grants
SustainableVision

Sustainable Vision grants support innovative educational programs based at U.S. colleges and universities. These programs move ideas to commercialization while addressing basic human needs for people living in poverty in the U.S. or abroad. Ten Sustainable Vision grants were awarded this year:

The projects represent eighteen U.S. universities working in sixteen countries in Asia, Africa, and Latin America and in the U.S. to develop, commercialize, and distribute technologies to benefit people living in poverty. Areas of focus include water purification, alternative energy, and developing wireless communications systems that connect people to information to improve business opportunities.

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Featured Sustainable Vision Grants 2007-08

Sustainable Technology-Based Entrepreneurship for the Senegalese Market

Pace University, 2007

\$47,198

Although Africa is now the fastest-growing mobile phone market in world, the role of cell phones is limited by the narrow scope of the applications relative to the needs of the African market. The goal of this project is to exploit the opportunity for cell phone-based startups in Africa by educating Senegalese students and business owners on how to develop innovative cell phone applications for emerging markets. Pace University will collaborate with the Stony Brook University Computer Science Department, Thies University, and the Senegal-based Women Business Center (WBC) on website design and mobile phone application development. After several boot camps, Senegalese students will be teamed with women from the WBC to develop solutions specific to the African market, e.g., a SMS application that allows tailors to save the measures, materials, prices and delivery dates of their products. The websites and cell phone applications will be developed using open source platforms.

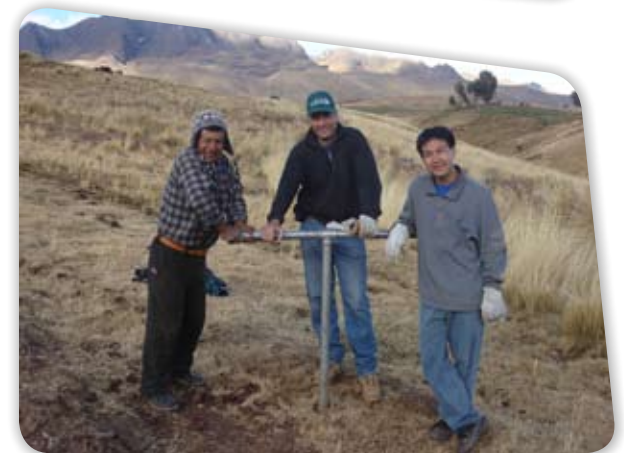


GlobalResolve: Starting a Gelfuel Business in Rural Ghana

Arizona State University, 2007

\$49,468

According to the World Health Organization, cooking and heating with solid fuels such as dung, wood, agricultural residues or coal is the world's largest source of indoor air pollution. When used in simple cooking stoves, these fuels emit substantial amounts of pollutants, including respirable particles, carbon monoxide, nitrogen and sulfur oxides, and benzene. This grant focuses on rural areas in Ghana, where 96% of the population uses solid fuels. Through ASU's entrepreneurship program, GlobalResolve, in partnership with Kwame Nkrumah University of Science and Technology (KNUST) and with the cooperation of the village chief and elders in Domeabra, the team will produce a fermented, corn-based, gelled ethanol and a companion smokeless stove. The team is using only local resources found in Ghana to make stoves that can be fabricated, marketed and sold in nearby communities.



Low-Cost Solar Water Heater

University of California, Berkeley, 2007

\$38,210

Most solar water heating systems on the market today use advanced materials geared toward wealthy clients in developed countries. This team aims to change that trend by developing a low-cost solar water heater for use in low-income Guatemalan households. The team's initial design, made to provide hot water for bathing and showering, consists of three basic components: a heat-collecting surface (absorber), a water bladder, and an insulating material. Two prototypes have been built, and two of the team members have traveled to Guatemala to work with partner NGO Appropriate Infrastructure Development



Group (AIDG) in gaining first-hand information on local conditions and materials. The team is now looking to finalize the design of the heater, explore partnerships with local organizations that can provide financing services that will allow people to buy the heater, conduct surveys of potential users in Guatemala to gauge their energy needs, and test the heater in the field. Ultimately, the team plans to allow AIDG to build and sell the heater to households in Xela, Guatemala. AIDG can then continue disseminating the design in other parts of the world, including Thailand, Haiti and the Dominican Republic.



Advanced E-Team Update
Axon Sleep Research Laboratories:
Sleep smart, wake refreshed
 Brown University, 2004
 \$18,000

As an E-Team, Axon Potential devised a way to combat sleep inertia—a groggy waking condition that negatively affects temper, basic mechanics, and reflexes—with a smart alarm clock that wakes the user only during light sleep by monitoring eye movements. The device quickly attracted commercial interest and in response the team formed the company Axon Sleep Research Laboratories.

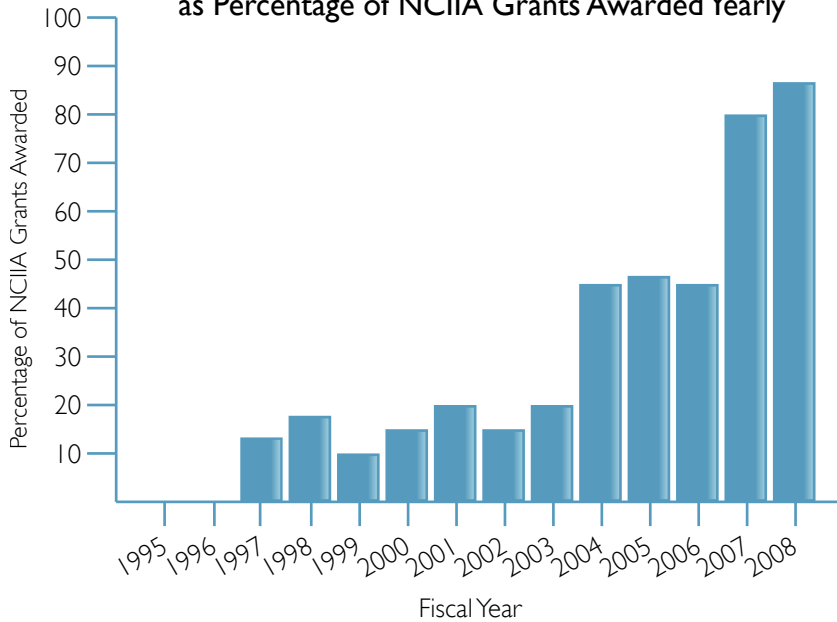
The company enjoyed several successes in 2007-08. It appointed a new chief executive officer and in early 2008 announced it had raised \$5 million in funding to further develop its innovative alarm clock, now called Project SleepSmart. The technology has been featured in a number of media outlets, including the *Boston Globe*, BBC, NPR, *New Scientist Magazine*, *Entrepreneur Magazine*, *Providence Journal*, Yahoo! News and several others.

Sustainable Vision Grants Awarded 2007-08

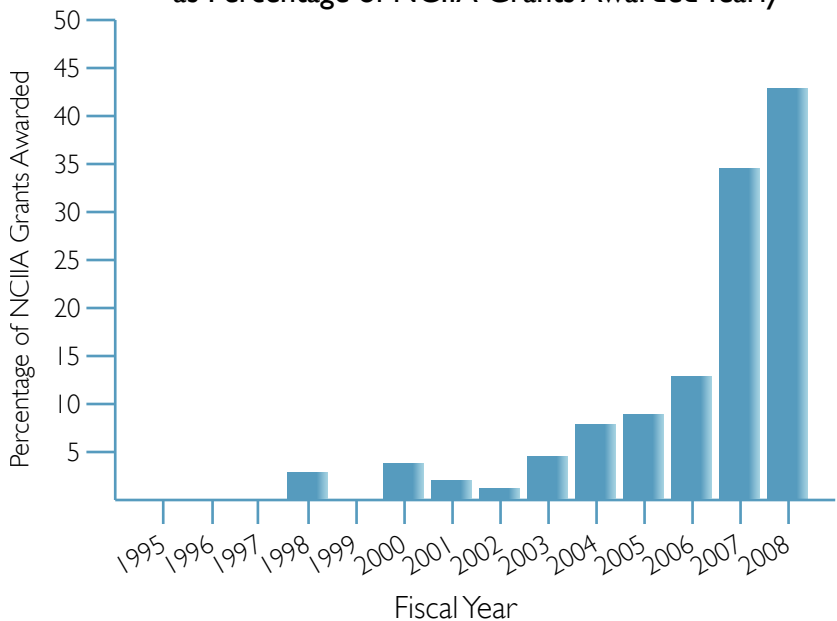
- **Sustainable Technology-Based Entrepreneurship for the Senegalese Market**
Pace University
 \$47,198
- **International Partnership on Safe Water Technology for Rural Communities in Developing Countries**
Savannah State University
 \$50,000
- **GlobalResolve: Starting a Gelfuel Business in Rural Ghana**
Arizona State University
 \$49,468
- **Battery Certification Program for Lead Battery Manufacturing in Vietnam**
University of Tennessee, Knoxville
 \$49,941
- **Developing Sustainable Off-Grid Energy Systems in Rural Mali**
Iowa State University
 \$46,778
- **Hydraulic Hybrid Retrofits for Developing Nations**
Colorado State University
 \$50,000
- **Low Cost Solar Water Heater**
University of California, Berkeley
 \$38,210
- **Strengthening Manufacturing Capacity of Burmese Metalworking Firms to Promote Sustained Development**
Stanford University
 \$49,480
- **Pico-Hydropower Franchising: A Test Bed in Rural Honduras**
Baylor University
 \$50,000
- **Development of a Business Model for the Implementation of a Sustainable Point of Use Water Filter Program in the Dominican Republic**
Saint Louis University
 \$49,999



Socially and Environmentally Focused Grants as Percentage of NCIIA Grants Awarded Yearly



Internationally Focused Grants as Percentage of NCIIA Grants Awarded Yearly



With the introduction of Sustainable Vision grants in 2006, the NCIIA has targeted its grants program to projects with sustainable and/or international focuses in order to address social and environmental programs in the world.



Testing a patient for anemia using the Lumen I

Advanced 8-Team Update

Corum Medical: The Luminary Lumen I
Brown University, 2006

\$20,000

Anemia, a highly preventable disease, often goes undetected in the developing world due to a lack of labs for testing and the high cost of equipment.

In 2006, the GlobaMED Devices: E-Team developed AnemiCAM, a rapid, inexpensive, non-invasive method of measuring blood hemoglobin levels. The device, which can be manufactured for less than \$100, examines the conjunctiva (the mucous membrane lining the inner surface of the eyelid and the exposed surface of the eyeball) and allows measurements to be made in less than ten seconds and with 95% accuracy. The team founded Corum Medical in 2006, an early stage medical instrument company focused on AnemiCAM (now called Lumen I).

Now

In 2007, Corum Medical signed a license agreement with Brown University and Rhode Island Hospital that gives Corum exclusive worldwide rights to the noninvasive method of measuring hemoglobin. The company received two Small Business Innovative Research grants. The grants, from the National Science Foundation and National Institutes of Health, will support the company's efforts in designing, development, clinical testing and launching Lumen I™, the first device developed by Corum Medical. Lumen I introduces a revolutionary approach to hemoglobin measurement with a non-invasive, hand-held instrument providing diagnostic quality in real time.

Resource, Experimental, and Dissemination Grants

The NCIIA directs a pool of funds to support experimental, resource and dissemination grants. **Experimental grants** fund new ideas, such as using the online *Second Life* platform to teach entrepreneurship to college students. **Resource grants** fund projects that will benefit NCIIA members and others, such as database of video clips on technology entrepreneurship. **Dissemination grants** fund faculty and staff to write and speak about their experiences in entrepreneurship education to targeted audiences

Grants awarded in 2007-08:

Virtual E-Team Incubator (VETI)

Babson College \$24,990

The virtual E-Team incubator (VETI) will provide opportunities for incubating start-up ventures in a virtual space, such as virtual business plan competitions, presentations by experts and guest speakers (legal, accounting, marketing, finance and venture capital), cross institutional collaboration and team building.

GROW: Hybrid Solar and Wind Ivy at MoMA

Pratt Institute \$5,000

This grant enabled the construction of four additional GROW prototype solar/wind panels, which were featured at the Museum of Modern Art exhibition, "Design and the Elastic Mind," in New York City, spring 2008.

Society for the Advancement of Chicanos and Native Americans in Science

Rensselaer Polytechnic Institute \$1,000

This grant enabled an RPI faculty member to present a session at the SACNAS Conference in October that encourages Native American students to chose engineering as a profession.

Design Revolution Book Tour 2008

\$10,000

The NCIIA sponsored the Design Revolution summer book tour, featuring Paul Polack talking about his new book, *Out of Poverty: What Works When Traditional Approaches Fail*. Paul visited a dozen college campuses around the country, speaking about radically affordable design and addressing poverty through technological innovation.

Sponsorships

Each year the NCIIA sponsors selected meetings, events and competitions that are aligned with its mission. In 2007-08, the NCIIA sponsored:

- Grinspoon Foundation Entrepreneurship Conference (Harold Grinspoon Charitable Foundation), December 2007
- Rice Business Plan Competition, April 2008
- IPRO (Interprofessional Projects Program): Best Practices of Interdisciplinary Team Programs, April 2008
- Indian Point International Development and Appropriate Technology Conference in Spain (MIT), June 2008
- Frontiers in Education Conference, Milwaukee, Wisconsin, October 2007

Advanced E-Team Update:

Modiv Media

\$12,480, Babson College, 2001

Seven years ago, the Vayusa E-Team created a mobile commerce solution that allows people to pay for products with their cell phone. At the checkout counter, the customer dialed the company, entered a four-digit PIN, chose a payment method (credit card, debit, etc.), and confirmed purchase. The Vayusa platform also used a loyalty card management system. Vayusa's system was fast and safe, required no additional equipment installed on either side of the transaction, and could be utilized with any existing cell phone.

Now

After graduating from Babson the team incorporated as MobileLime, completed a round of funding that brought in \$2.2 million, and launched in Boston with twenty-one employees in March 2003. In 2007 the company merged with Cuesol to become Modiv Media, developer of a next generation retail media delivery platform. Modiv Media has deployed its "Scan E" scan and bag system to 145 Stop & Shop supermarkets on the East Coast.

Advanced E-Team Update:

EcoTech Marine: From Fish Tanks to Foot Spas \$18,738.00, Lehigh University, 2005

Maintaining a reef aquarium requires adequate water circulation to balance water chemistry, carry nutrients to inhabitants, and remove waste, all of which can be accomplished by means of a pump system. The EcoTech Marine E-Team developed a new product, the VorTech™ propeller pump, which creates a wave-like water flow while minimizing the intrusion of heat and bulky equipment into the reef environment. The team formed EcoTech Marine in 2003.

Now

The Bethlehem, PA-based company recently moved into a larger facility and employed new staff. EcoTech has diversified into the spa market with a new design of the VorTech pump, and received an award for product innovation at the Northeastern Pennsylvania Innovation Awards in May 2008.



United States colleges and universities have an untapped entrepreneurial resource in their students and faculty. Since 2003, Invention to Venture (I2V) workshops, offered in conjunction with host institutions around the country, have tapped that potential by introducing participants to basic concepts of technology entrepreneurship. The workshops, which are open to students, faculty, and the business/innovation community, serve both as a hands-on educational experience and as a networking opportunity.



Invention to Venture workshops are directed to:

- Students/faculty interested technology entrepreneurship and how to commercialize research
- Aspiring entrepreneurs from the science and technology communities
- Business people seeking connections with university students and faculty
- Investors seeking high growth potential companies
- Businesses seeking to identify new technology opportunities

This year, the NCIIA presented twenty-three I2V workshops, reaching more than two thousand participants around the country. We introduced six new workshop sites this year in Arizona, Florida, Louisiana, South Dakota, Minnesota, and Pennsylvania.

Participants receive detailed instruction and one-on-one coaching, including repeated pitching to investors with real-time feedback.

The workshop is followed by eight weeks of coaching and strategy sessions with NCIIA-selected mentors.

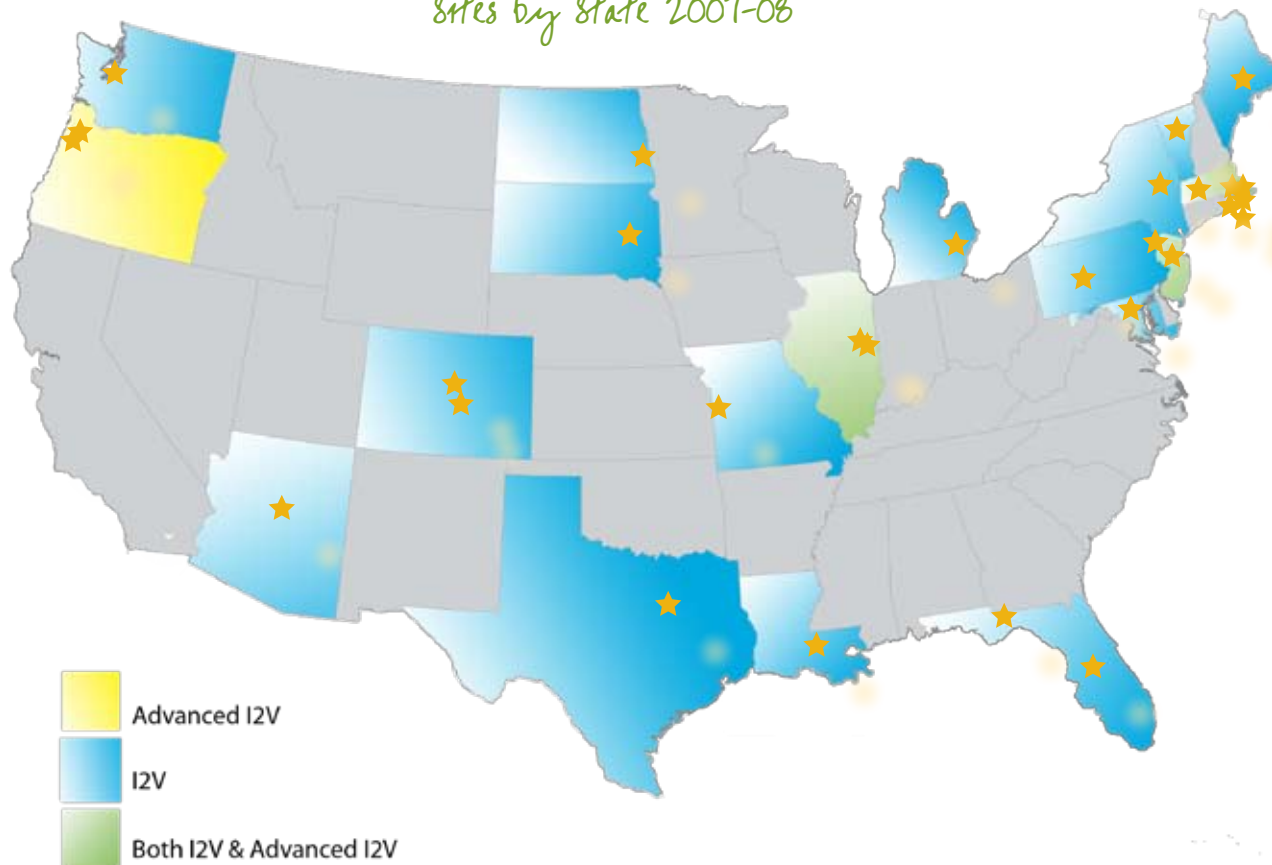
Seven Advanced I2V workshops were held in 2007-08. Hosts and venues included UMass Amherst, MIT, Portland State University, New Jersey Institute of Technology, the University of Illinois Urbana-Champaign, and sites in Boston.



"AI2V is unabashedly a course to strengthen your company pitch to investors. It does a great job of doing that. Just as importantly, AI2V helped everyone on my small team learn how to quantify our business practices. The net result is a much stronger and more dynamic business. The step-by-step approach allowed me to quickly rethink and rebuild our business plan and then practice it in front of other entrepreneurs and real venture capitalists. And, all of this occurred in the span of four days rather than an agonizing and disrupted several months."

-Chris Dawson, CEO, Box Populi

*Invention to Venture and Advanced Invention to Venture
Sites by State 2007-08*



Fall 2007

- AI2V Boston
- AI2V Urbana
- I2V Kansas City
- UMD Bootcamp
- I2V South Dakota
- I2V Orlando
- I2V Maine at Orono
- I2V ASME: I-Show
- I2V Penn State

Spring 2008

- I2V UMass Amherst
- I2V Concordia College
- I2V University of Portland
- I2V LA State University
- I2V University of IL Urbana Champaign
- I2V Lawrence Tech Univ
- I2V UMass Dartmouth
- I2V Florida A & M
- I2V University of CO Denver
- I2V WBT, Arlington, TX
- AI2V MIT

- AI2V Boston
- I2V University of Northern AZ
- I2V University of Vermont
- I2V Rensselaer Polytechnic University
- I2V University of CO Colorado Springs
- I2V Green Ventures, Fairleigh Dickinson
- AI2V Portland State University
- AI2V NJ Inst of Technology
- AI2V for InvenTeams, MIT

"The workshop was fantastic! Both teams benefited enormously and both are actually now working on follow-up proposals. I learned a lot of practical details as well. I'd like to explore having one at Berkeley next year."

-Alice Agogino, professor at UC Berkeley

This workshop was an eye-opening introduction into the entrepreneurial world. Each new hour delivered crucial information that I did not even know existed. From my post-workshop vantage point, I look back at my pre-workshop self and cringe at the utter naiveté of my 'business plans.' Awesome workshop."

-Don O'Malley, associate professor of biology, Northeastern University

"This intensive workshop taught me what I needed to know to take my invention and turn it into a viable business venture. The hands-on activities were greatly enhanced by the professionalism, personality, knowledge and experience of the instructor."

- David Ermer, CEO, Opti-MS

"I found all of the intellectual property and copyright information immensely interesting and informative. I also enjoyed the talk about team building."

-DG

"I'm a science grad student. It's helpful to get grounded occasionally and be reminded that, in the real world, money and entrepreneurship make the world go round."

-JL

"I liked the wide range of people that attended. I was given advice from people starting up a company, from those who already had a successful company, and from a well-known inventor. This mix of presenters really made the event worthwhile."

-MBS

NCIIA Competitions

The NCIIA administers and oversees a series of competitions and awards programs each year. These programs share the common purposes of:

- Supporting and strengthening professional networks, including specialized fields of invention, innovation, and entrepreneurship education
- Identifying, recognizing, and rewarding those who excel in the designated areas of specialization
- Raising the profile of invention, innovation, and entrepreneurship and the professionals who advance the field of education



BMEidea 2008 award winners at the Medical Design Excellence Awards ceremony in New York City

NCIIA Competitions BMEidea

Since 2005, the BMEidea competition has encouraged top student biomedical innovators from around the country to move their ideas from lab to market. The winners of the fourth BMEidea competition received their prizes at the Medical Design Excellence Awards ceremony at the Medical Design & Manufacturing (MD&M) East trade show at the Jacob Javits Center in New York in June.

The competition is sponsored by MD&DI, IDSA, Boston Scientific, and the National Science Foundation. It is endorsed by BMES and the Council of Chairs of Bioengineering and Biomedical Engineering Departments.

2008 BMEidea Winners

First Prize: \$10,000

Rapid Suture

Stanford University

Rapid Suture is a small, inexpensive device that allows for quick, safe, and easy surgical tissue manipulation during laparoscopic procedures.

Second Prize: \$2,500

KMC ApneAlert

Northwestern University

KMC ApneAlert is a device for premature infants that monitors abdominal breathing movements and sounds an alarm when the infant stops breathing.

Third Prize: \$1,000

REGEN: Local Delivery of Post-Operative Analgesia

Johns Hopkins University

REGEN is a small implantable receptacle that diffuses pain-relieving analgesic directly at the site of a laparoscopic incision.

The BMEidea Award trophy



UPDATE: BMEidea Second Prize Winner 2007:

enLight: Enabling Life with Light

Stanford University

The team is developing enLight, a novel treatment for Parkinson's Disease that enables the effective and reliable control of neural activity using light.

A surgeon implants a thin optic fiber in the brain. Then, using gene therapy techniques, the patient receives a genetically coded protein that makes the neurons involved in Parkinson's sensitive to light. The optic fiber shines light into the right region of the brain, and the neurons associated with Parkinson's are activated. The ability to directly and specifically control neurons represents a major step forward that has the potential to revolutionize the field.

Since winning BMEidea funding, the E-Team has filed several patents and moving toward pre-clinical animal testing. Next, the team will produce the biological reagent and ramp up to clinical trials. Refinements need to be made to the optical fiber to make sure the technique brings in the right amount of light.

E-Team member Zhang says winning BMEidea gave his project credibility. "First of all it gave us validation—maybe our idea isn't so crazy after all!" he said. "Plus the events that we've attended as a result of winning BMEidea have been very helpful. We've been able to network with people who work in the medical device industry and gotten new insights."

NCIIA Competitions
Olympus Innovation

Since 2005, Olympus America and NCIIA have presented the Olympus Innovation Awards, which recognize faculty excellence and innovation in higher education. The 2008 award winners were announced at the NCIIA's Annual Meeting.

Olympus Innovation Award (\$10,000)



Stanford University professors Tom Byers and Tina See-ling are co-founders of the Stanford Technology Ventures Program (STVP), which encourages top engineering and science schools worldwide to include entrepreneurship as part of their curricula.



Olympus Emerging Educational Leader Award (\$1,000)

Martina Musteen, assistant professor at the College of Business Administration at San Diego State University was recognized for giving students the opportunity to work with international entrepreneurial companies to expand their global market opportunities.

OLYMPUS®

Your Vision, Our Future



Olympus Lifetime of Educational Innovation Award (\$2,500)

David Barbe, professor of electrical and computer engineering at the University of Maryland and executive director of the Maryland Technology Enterprise Institute, has created one of the leading innovative technology entrepreneurship cultures at a U.S. university, through successful initiatives such as the university's Hinman CEOs program and its Technology Startup boot camp. Both programs have become models that are replicated nationwide, as well as through the Maryland Industrial Partnerships program.



"As for the impact of the Olympus award, I think the most noticeable effect has been in terms of the visibility of my course in International Entrepreneurship. A number of students have contacted me and are interested in taking the class. I feel like it has also make my work of recruiting international entrepreneurial companies to work with my students somewhat easier as the award enhanced my visibility and credibility as an entrepreneurship teacher/scholar."

*-Martina Musteen, 2008 Winner,
 Olympus Emerging Educational Leader Award*

2005 Inaugural Winner

Steven Nichols, UT Austin

The inaugural Olympus Innovation Award went to Steven Nichols, professor of mechanical engineering at the University of Texas at Austin. Nichols' work has impacted thousands of students both at UT and abroad, through programs like the Design Projects Program, the Technology Entrepreneurship Society (TES), the Idea to Product (I2P) Competition, and the International I2P program.

2006 Winner

John Ochs, Lehigh University

Peter Likins, a former President of Lehigh, once said that John Ochs has had "perhaps the most profound impact on Lehigh's curriculum in history." Ochs' efforts have had broad and deep impact across a variety of disciplines, fostering a campus-wide culture of entrepreneurial thinking and interdisciplinary cooperation.

Ochs created the Integrated Product Development (IPD) program, which focuses on technical entrepreneurship through experiential learning. Ochs remarks, "Our vision is to create a sustainable and scalable educational environment that supports imagination, creativity, innovation, invention and entrepreneurship for all students, faculty, staff and alumni of Lehigh University. The goal of the Lehigh programs is to give anyone with guts and passion the opportunity to take this journey of development."

2007

Deborah Streeter, Cornell University

Deborah Streeter, the Bruce F. Failing Senior Professor of Personal Enterprise at Cornell is widely known for creating e-Clips (eclips.cornell.edu), an online collection of thousands of video clips from in-depth interviews with entrepreneurs and other experts. With over 7,000 clips in the database, e-Clips is the largest digital video collection on entrepreneurship, business and leadership in the world. And because Streeter's collection is freely available to students and educators worldwide, the impact has been broad: people in seventy countries from nearly 800 universities have used the site, from Cornell students to a group of New York educators working with small businesses to Peace Corps volunteers in Armenia.

The site has become the premiere collection of entrepreneurship-related video content on the web.

ASME IShow

ASME's Innovation Showcase (IShow) provides a platform for top collegiate student teams to compete for seed money to commercialize their idea. The program was developed in collaboration with ASME (American Society of Mechanical Engineers), the I2P program, and corporate sponsors. The Innovation Showcase (IShow) provides a platform for top collegiate student teams to compete for seed money to commercialize their idea. While demonstrating their technological creativity and business acumen, winners must provide the commercial feasibility of their products to a judging panel and audience of successful innovators, industry experts, venture capitalists, and intellectual property specialists.

The 2007 winners, who were announced at the American Society of Mechanical Engineers (ASME) Conference in November, each received a portion of \$20,000 in seed funds. The ten semifinalist teams, including several NCIIA E-Teams and their faculty advisors, were enrolled in Invention to Venture workshops.

The finalists selected to participate in the 2008 iShow included:

- Baylor University **Whole Tree**
- Johns Hopkins University **Head Impulse Test Device**
- Johns Hopkins University **SurgyPack**
- Massachusetts Institute of Technology **Robopsy: Inexpensive Medical Robotics**
- Pennsylvania State University **Mashavu**
- Rensselaer Polytechnic Institute **Automated Landmine Removal**
- University of California, Berkeley **Advanced Affordable Solar Water Heater**
- University of California, Berkeley **Berkeley Electro-Coagulation Arsenic Remediation (BEAR)**
- University of California, San Francisco **Titan Medical**
- Virginia Military Institute **The Extremely Low Frequency Seismic Detector**

NCIIA co-sponsors IShow with the ASME and Idea to Product (I2P).



INTEL ISEF

In May 2008, more than 1,500 of the world's most promising young scientists and innovators gathered in Atlanta, Georgia, to compete in the Intel International Science and Engineering Fair. Representing fifty-one countries, regions and territories, each of these students earned top honors at local and regional competitions before being selected as finalists at the 2008 competition. From this impressive candidate pool, the NCIIA made eleven special team awards of \$1,000 each.

2008 Winners

Oguz Koca and Utku Durmaz, Turkey

Production of Highly Resistant and Heat Insulated Brick by Using Waste Boron and Calculating the Provided Energy Saving

Maria Orb, Estonia

Reducing Formation of Scale with Magnetic Descaler

Bailey Denise Day, Andrews, TX

Germicidal Organics on Mycobacterium Fortuitum

Michael David Alexander Peters, Canada

The Actuator

Mary Lucia Hedberg, N. Attleboro, MA

Desert Desiccant: Low Humidity Therapy for Arthritis Pain Relief

Barnett Samuel Koven, Short Hills, NJ

Engineered Anaerobic Digestion Utilizing a Thermophilic Media

Syed Mohd Esmat Hussaini, Malaysia

Hybrid Electromagnetic Drum Brake System

Bradley T. Williams, Harrisburg, PA

Energy Conservation Through the Mitigation of Multiple Daylighting Façade Scenarios for Schools

Pitter Wisley dos Santos Oliveira, Cleiton Silva Soares, and Gleberson Sena Souza, Brazil

Washing Machines's Spare Parts Transformed into a Bread Dough Mixer

Joshua Michael Schwartz

Oceanside, NY

Bio-MEMS Radio Frequency Identification (RFID) Device for Systolic and Diastolic Blood Pressure Monitoring

Thomas Ben Thompson, Ann Arbor, MI

So Many Data-So Few Labels: The Effects of Autoencoders on Unlabeled Data for Pattern Recognition

NCIIA 12th Annual Meeting

The NCIIA's 12th Annual Meeting, *Getting to the Point: Ideas, Process, Products*, was held in Dallas March 18-20, 2008. More than 150 faculty and students attended the event, which featured more than fifty presentations and workshops, the Olympus Innovation Awards, a keynote address by creativity expert Sir Ken Robinson, and the annual March Madness for the Mind event.

For the second year, the NCIIA provided a daylong workshop for grantees of the Sustainable Vision program, which is in its second year. Participants described the successes and challenges they had experienced in their projects, which include field-based outreach in Tanzania, Mali, Vietnam, Honduras and Guatemala. The session also featured a presentation by Paul Polak, founder and director of International Development Enterprises, who for the past twenty-five years has developed practical solutions to poverty around the world.

For links to conference session descriptions and papers, visit www.nciia.org/conf08.



NCIIA 12th Annual Meeting March Madness for the Mind

At the 12th Annual Meeting, we hosted **March Madness for the Mind**, our annual celebration of E-Team innovation and entrepreneurship, at the Nasher Sculpture Center. We selected the following top E-Teams from our grantee institutions to showcase their work, many unveiling their cutting-edge innovations publicly for the first time:

Arachnovation (Marshall University) Novel adjustable "Spider Easel" for artists

The Coconuts (Baylor University) value-added products that can be manufactured from coconuts using simple, inexpensive technology

The Buzby Networks (Pennsylvania State University) ZigBee® wireless sensor network technologies for healthcare environments

Extremely Low Frequency Seismic Detector (ELF SD) Virginia Military Institute) device to allow miners to communicate with rescuers on the surface in the event of a mine collapse

Ecovative Design (Rensselaer Polytechnic Institute) Greensulate environmentally friendly home insulation material made from mushrooms

Multilayered Hydrogel Microfibers for Cell and Tissue Engineering (Johns Hopkins University) Hydrogel Microfiber to enable small diameter vascular grafts in coronary artery bypass surgery

Flexible Prosthetic Vein Valve (Georgia Institute of Technology) to treat Chronic Venous Insufficiency (CVI), with a lower-risk, minimally invasive procedure.

Rotavirus Vaccination via Oral Thin Film Delivery (Johns Hopkins University) oral delivery rotavirus vaccine that requires no refrigeration and may be administered to infants

SMIT Design Group (Pratt Institute) GROW, a hybrid solar and wind panel designed to resemble ivy vines

SolarShade (Notre Dame University) solar-powered aftermarket window treatment solution designed to selectably tint a window at the push of a button

Tiny-Fi (Johns Hopkins University) wearable patient sensors that detect patient heart rate and blood oxygenation level and wirelessly transmit the data to the health care providers

Intelligent Ground Condition Monitoring System (IGCMS) (University of Massachusetts Amherst) sensor technology that can efficiently monitor the condition of load-bearing structures

Small Engines: A Technology Alternative for BOP Farmers (Colorado State University) small, fuel-efficient engine to meet the water pumping and electricity generation requirements of small and marginal farmers in the developing world

H.DuO (Rensselaer Polytechnic Institute) connectable plastic bottles to build products from furniture to housing in developed and developing countries



What people said about the NCIIA 12th Annual Meeting

"The meeting is excellent for networking, learning about creative methods for teaching, and advancing student ideas."

"It offers attendees the chance to connect with others, learn from others, and share ideas and lessons you've learned!"

"This was the first time I have attended the meeting and it was very informative for teaching techniques, research topics, and networking opportunities."

Funders and Partners

the Lemelson foundation

The Lemelson Foundation launched the NCIIA in 1995 and continues to support its ongoing programs and many new initiatives. The Lemelson Foundation celebrates and supports inventors and entrepreneurs in order to strengthen social and economic life.

Established in 1993 by Jerome Lemelson, one of America's most prolific inventors, the Lemelson Foundation sparks, sustains and celebrates innovation and the inventive spirit. It supports projects in the U.S. and developing countries that nurture innovators and unleash invention to advance economic, social and environmentally sustainable development. To date the Foundation has donated or committed more than \$150 million in support of its mission.

The Foundation's programs stem from a three-pronged strategy:

1. Recognition - The Foundation works to recognize and celebrate successful inventors, and develops programs that reward inventive minds. It also supports policy and educational initiatives that foster cultural appreciation of innovative creativity.

2. Mentoring - Because a wise advisor and a supportive environment can make all the difference in an inventor's journey, the Foundation supports high-caliber mentoring and education for young inventors. This mentoring support helps innovative people overcome the many obstacles that may block the path leading from potentially significant innovations to products that change people's lives.

3. Dissemination - The Foundation believes in the value of spreading sustainable technologies that can create economic opportunity and improve lives in societies that can benefit most from such advances. It also researches and disseminates information that highlights the role of invention in society.

U.S. Initiatives:

The Foundation supports several grantees, including the NCIIA, whose programs inspire and develop inventiveness in young people and foster appreciation for the critical role of invention and innovation in American economic, social, and cultural development.

International Initiatives:

Understanding that invention and innovation play a critical role in improving living standards around the globe, in 2002 the Foundation launched Invention for Sustainable Development, a program to address the challenges facing the nearly 3 billion people trapped in poverty in less-industrialized countries.



Other Funders

The Kauffman Foundation

The Invention to Venture program is supported in part by the Ewing Marion Kauffman Foundation. The Kauffman Foundation works with partners to encourage entrepreneurship across the U.S. and improve the education of children and youth. It strives to foster an environment nationwide in which entrepreneurs have the information and tools they need to succeed. The Kauffman Foundation promotes entrepreneurial success at all levels.

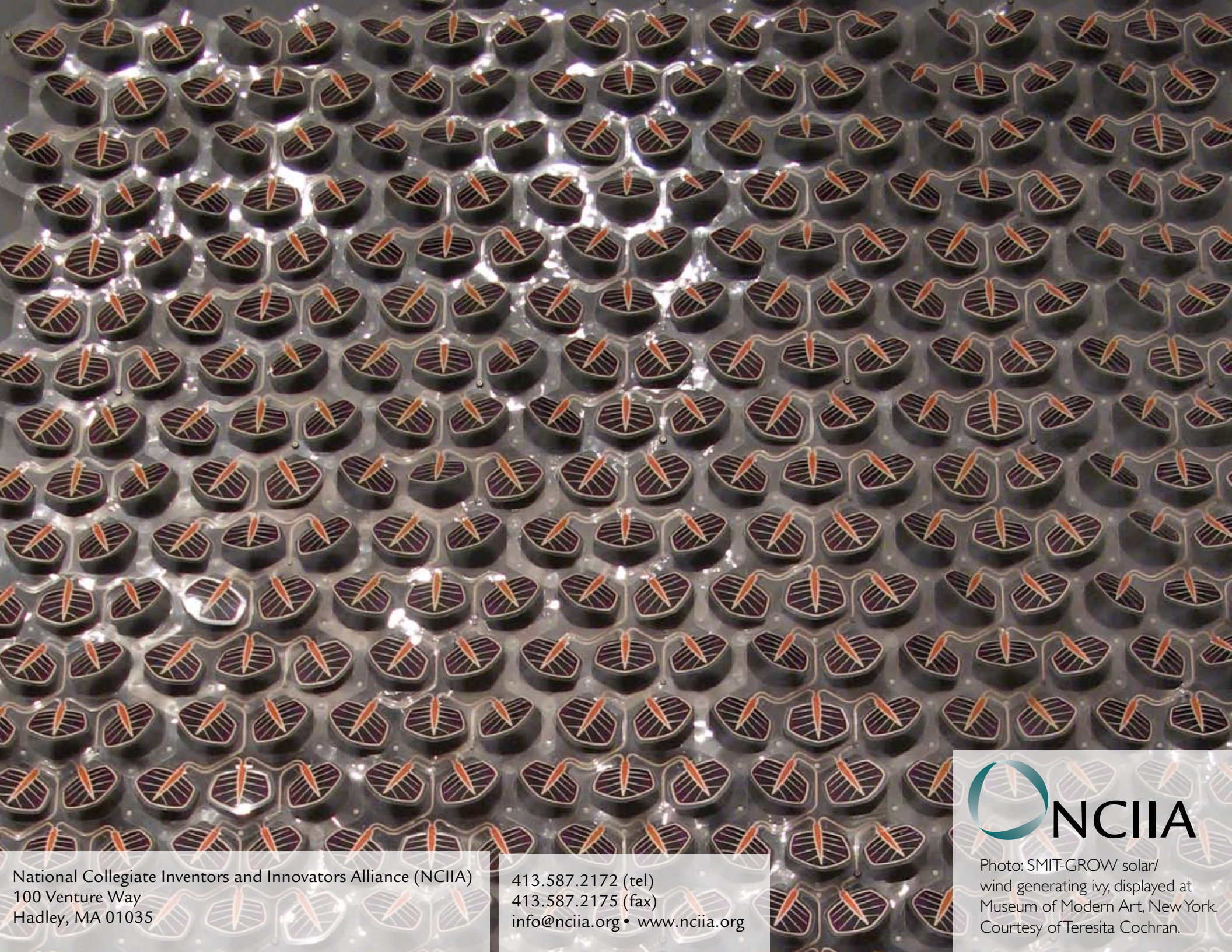
Meyer Memorial Trust

In May, the NCIIA received a grant from the Meyer Memorial Trust to support emerging entrepreneurs in undergraduate programs at universities in Oregon. The NCIIA will work with Oregon State University, Portland State University and University of Oregon to plan and stage a series of Invention to Venture workshops designed to educate student entrepreneurs and provide them with follow up mentoring. Meyer Memorial Trust invests in people, ideas, and efforts that deliver significant social benefit to Oregon and southwest Washington.

National Science Foundation

The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..." In many fields such as mathematics, computer science and the social sciences, NSF is the major source of federal backing.

The NSF awarded two grants to the NCIIA in 2008, for research on evaluation and assessment of entrepreneurship courses. NSF also sponsors NCIIA's BMEidea competition.



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Photo: SMIT-GROW solar/
wind generating ivy, displayed at
Museum of Modern Art, New York.
Courtesy of Teresita Cochran.