



THE TECH MUSEUM AWARDS

Technology Benefiting Humanity

Presented by Applied Materials, Inc.

2005 Tech Award Laureates

The Intel Environment Award

CTx GreEn (Community-based Technologies Exchange fostering Green Energy Partnerships)

Kitchener, ON, Canada

A small-scale renewable energy system in Orissa, India based on the utilization of local biomass. The system is being implemented in 4 villages, using indigenous oil seeds for extracting oil, and waste fruits for absolute ethanol. A pedal-driven oil seed grinder, oil seed press, and biodiesel reactor generate biodiesel to pump water for consumption and for irrigation. Small, remote villages using this application are unlikely to get an electric grid connection in the next 15 years.

Envirofit International, Ltd.

Fort Collins, CO

The "EnviroKit" is a retrofit kit that was developed to reduce tailpipe emissions from over 50 million 2-stroke cycle engines used in Asia. It can be installed on existing 2-stroke engines to allow the use of direct, in-cylinder fuel injection. The kit has been extensively validated and shows the ability to reduce hydrocarbon emissions by 90%, particulate emissions by 80%, carbon monoxide emissions by 70%, and improves fuel efficiency by 30%. The technology is now being applied in the Philippines, but has the potential for widespread dissemination throughout Asia.

Enviro Options (Pty) Ltd.

Kya Sands, South Africa

The Enviro Loo, with thousands of installations predominantly in Africa and Central America, is a waterless dehydration/evaporation toilet system that provides a non-polluting, cost-effective sanitation system. It offers a standard of respectability and convenience for residents in rural and/or impoverished communities that have no other form of sanitation due to chronic water shortages, no water treatment facilities or recurring maintenance issues. The Enviro Loo utilizes bacterial and biological technology, and has been tried, tested, and evaluated in the field since 1993.

Norman Holy, Better Gear

Yardley, PA

Novel fishing gillnets and ropes designed to reduce or eliminate by-catch of marine mammals (particularly dolphins, whales, porpoises), without limiting the total yield of the fishermen's catch. Thus, Norman Holy's fishing gear strikes a balance between protecting the environment and the protection of the business of harvesting the ocean. Properties in the nets (density for echolocation, opaqueness for visibility at greater distance, and stiffness for "bouncing off") help save mammal life. Ropes with lower tension rates help eliminate mammal entanglement deaths. Fishermen can practice their trade without worrying about regulations or compromising their yields.

**Reef Ball Foundation
Woodstock, GA**

An international non-profit environmental group helping restore the world's ocean ecosystems, with emphasis on preserving the natural reef systems. The Reef Ball is an artificial hollow concrete module that mimics the appearance and function of natural coral reef. It varies in composition, size and thickness with openings and channels to create an ideal marine living environment. Coral reefs are in decline worldwide – scientists estimate 11% of the world's coral reefs have already been lost and believe another 32% will be lost in the next 30 years. This is a common sense approach to rebuilding reefs eroded by dynamite fishing, run-off, pollution, global warming and natural disasters.

The Accenture Economic Development Award

**ABT Insulpanel
Richmond Hill, ON, Canada**

ABT Insulpanel has taken a decades old technology – the fabrication of construction materials from compressed agricultural fiber -- and improved upon it so that the panels can bear loads and be easily locked together. The company has ambitious plans to diffuse the technology to developing regions of the world, beginning with Romania. Large quantities of post-harvest grain fiber in countries like Romania are simply burned, contributing to environmental pollution and global warming. ABT Insulpanel's initiative promises to increase farmers' income by generating a market for what has heretofore been a waste product, and reduce the cost of construction materials while lessening dependence for these materials on imports from outside of the country.

**BMS
Friars Hill, WV**

The BMS Micro Blaster is an innovative solution to the problem of demolishing large rock or masonry structures. Standard techniques for blasting require permits and the use of dangerous explosives. The Micro-Blaster system uses a proprietary gas cartridge to fracture rocks and masonry weighing up to several tons. The charge is loaded into a hardened steel tube in a 5/16 inch hole bored by standard rotary hammer drills. The explosion is actuated by a 25 foot lanyard or hose. The gas burns rapidly but only when pressurized. As soon as the rock cracks, the pressure is released, and the burn rate drops dramatically. This feature decreases danger from flying rock fragments, and virtually eliminates danger to surrounding structures from shock waves. The BMS system is lightweight (one can carry it in a backpack) and thus can substitute for the use of pneumatic drills or heavy equipment such as backhoes. The Micro-Blaster can be used by rural landowners, road crews, landscape architects, installers of underground water, electric, gas, or sewer lines, and National Park employees engaged in back country trail maintenance.

**Malnutrition Matters
Ottawa, ON, Canada**

The Vita-Goat food processing system, intended for developing countries, aims to preserve a seasonal oversupply of food that cannot be moved to other markets because of inadequate transport and marketing infrastructure, thus supplementing the local food supply with high quality but affordable protein and providing employment for unskilled women in rural areas. And it does this without the need for electricity, running water, refrigeration, or capital intensive canning plants.

**SELCO Solar Light Pvt. Ltd.
Bangalore, India**

In the developed world, electricity produced via photovoltaic cells remains an expensive alternative to that generated by more conventional means, such as steam or water turbines. In the developing world, however, electricity from a grid is generally more expensive and its supply less reliable. This creates, especially in rural areas, both a need for electricity and an opportunity for those who can supply it. SELCO's emphasis has been on the supply of electricity for illumination, and to a lesser degree, the operation of small electric motors. The innovations of this company have been less in hardware and more in the area of service and financing. By partnering with local financial institutions, and linking the acquisition of these systems to additional income earning opportunities, they have made it possible for poor rural households to acquire reliable electric supply systems for moderate drain applications. In the past decade SELCO has built a network of 25 retail sales and service centers, and installed more than 40,000 photovoltaic systems.

**WorldFish Center
Penang, Malaysia**

Domesticated animals throughout the world reflect the results of generations of artificial selection, in which progeny have been bred to enhance traits considered desirable. It is only recently that such techniques have been systematically applied to fish. We honor the work of the World Fish Center in developing GIFT - Genetically Improved Farmed Tilapia. Fish are an important and growing source of proteins and other nutrients for the world's population, but with wild stocks in many cases overfished and with the catch growing at less than two percent per year, aquaculture has become more attractive, and, particularly in the developing world, critically important for food security. In low income food deficient countries, fish provide 20 percent of animal protein, compared with 13 percent in the industrialized world. In Asia as a whole the figure is 30 percent, and in some countries even higher (58 percent for Indonesia; 75 percent for Cambodia).

The Microsoft Education Award

**Gilbert Clark, Telescopes in Education Foundation
Altadena, CA**

The Telescopes In Education (TIE) Foundation provides free remote access to telescopes around the world for K-14 students and educators. Once an account has been established for the school or organization, the students can remotely control a telescope and CCD camera to image objects throughout our Universe. They can do research, publish papers, or simply take "pretty pictures". The TIE program also provides hands on training in remote astronomy for educators on a limited schedule.

**Design that Matters, Inc.
Cambridge, MA**

The Kinkajou Projector combines state-of-the-art light-emitting diodes (LEDs), low-cost plastic optics and microfilm to produce a durable, low-cost educational tool for rural communities in developing countries. Optimized for nighttime use in classrooms without electricity, the Kinkajou can project an image up to three meters tall onto practically any flat surface. The US\$12 microfilm cassette holds up to 10,000 pages. The design requires no tools more complicated than pocket change for maintenance, and includes a solar panel for off-grid use.

**Fahamu
Oxford, UK**

Fahamu, in conjunction with the University of Oxford, have pioneered a unique and innovative approach to learning ideally suited to the technology environment of civil society organisations operating in Africa. In this environment, resources are stretched and prolonged staff absence can put an organisation's work in jeopardy. Using CDROMs, workshops and a learning community mediated by the internet, Fahamu's courses help build capacity and allow participants to apply what they learn during the learning process.

**In2Books
Washington, DC**

In2Books' mission is to help all children become lifelong readers, writers, and thinkers by empowering them, their families, and teachers with resources and support. In2Books combines technology and research-based literacy curriculum in innovative ways that catalyze communities to work together to increase student achievement and enhance teachers' literacy instruction skills.

**MIT OpenCourseWare
Cambridge, MA**

MIT OpenCourseWare (MIT OCW), available at <http://ocw.mit.edu>, makes the course materials used in the teaching of all MIT undergraduate and graduate subjects available on the Web, free of charge, to any user in the world. Educators utilize the materials for curriculum development, while students and self-learners around the globe use them for self-study or supplementary use. With 1100 courses now available, MIT OCW is delivering on the promise of open sharing of knowledge.

The Agilent Technologies Foundation Health Award**Hib Vaccine Team
Cuba/Canada**

Dr. Verez-Bencomo led a project to develop a synthetic polysaccharide conjugate vaccine against Haemophilus influenzae type B (Hib), a bacteria that can cause meningitis and pneumonia. Hib infections are estimated to be responsible for 200,000-700,000 childhood deaths annually around the world. Highly effective Hib vaccines made from purified bacterial polysaccharides have been available and widely used for several years in the U.S. and Europe. These vaccines are expensive, limiting their incorporation into vaccination programs in developing nations. Dr. Verez-Bencomo's group developed a completely synthetic version of the Hib antigen that is equally effective immunologically, can be more readily manufactured at lower cost, and may be safer to use than current commercial Hib vaccines. Over 1 million doses of the vaccine have been safely delivered into Cuban children. This work may be a template for future synthetic vaccine production.

**OraSure Technologies, Inc.
Bethlehem, PA**

The OraQuick ADVANCE Rapid HIV Antibody test is an FDA-approved test for detecting HIV infection. This product is designed to both increase the number of people being tested for HIV infection, and to increase the chances that tested individuals will obtain their results and act upon them. OraQuick Advance can be completed in 20 minutes using either blood (from a finger stick) or saliva. This test is relatively inexpensive and simple to administer, and is CLIA-waived, meaning that it can be executed by trained individuals outside of a highly-regulated laboratory

setting (ex. local clinics or mobile healthcare facilities). The ability to use an oral swab rather than blood makes the test safer for the person administering it. OraQuick Advance is being widely offered now by state and local health departments at hospitals and clinics, and through various outreach efforts, and OraSure is expanding distribution internationally.

**Partners In Health
Boston, MA**

To support its treatment programs for multidrug-resistant tuberculosis in Peru and HIV in Haiti, Partners In Health has developed the first comprehensive, web-based, electronic medical record (EMR) system to support chronic disease management in a developing country environment. The EMR combines clinical data for direct health care with tools for reporting, logistics and drug supply, and research in a single system. The EMR can be replicated in other resource-poor settings for the management of complex chronic diseases such as HIV and TB.”

Project Impact

Berkeley, CA

Project Impact develops medical technologies designed to make basic human needs, such as sight and hearing, affordable and available to all. Project Impact works to transfer technology to allow manufacturing in developing nations, and employs a self-sustaining production and distribution model. Project Impact played a key role in the development of affordable intraocular lenses for cataract surgery, ophthalmic sutures, and affordable digital hearing aids, all of which are being manufactured in India and sold at dramatically reduced prices relative to comparable products in the U.S..

**Dr. Joshua Silver
University of Oxford, UK**

There may be 1 billion people around the world who would benefit from vision-correcting spectacles, but cannot obtain them because of a lack of trained eyecare professionals, and/or lack of ability to pay. Dr. Silver has addressed this problem by developing novel, inexpensive adaptive lenses that the wearer can self-adjust. These lenses have been extensively tested in Africa, and are now being manufactured in China and distributed in Africa.

The Knight Ridder Equality Award

**AMD
Sunnyvale, CA**

AMD launched in October 2004 an ambitious strategy of technology development and marketing partnerships to bring 50% of the world into internet connectivity by 2015. A key element in this strategy was the development of a Personal internet Communicator (PIC), a stripped down, rugged and easy to use computer specially designed to facilitate internet connectivity and basic computing at a price attractive to a hefty fraction of the world's poorest citizens. The 50x15 initiative and PIC strategy serves as a great example of corporate strategy taking seriously the purchasing power of those at the “bottom of the pyramid”, thus improving equality of access to information in a way that is sustainable because it is profitable.

**AnthroTronix, Inc.
Silver Springs, MD**

The care extended to disabled children improves every year, and technology has begun to play a direct role in that improvement. Anthrotronix is an encouraging symbol of that role. Its founder, Dr. Corinna Lathan, has developed with her company an innovative set of rehabilitation

and learning tools. These tools combine two exciting trends in small-scale robotic technology: control of robotic movement through movement and gestures, rather than through a traditional keyboard that may be too difficult to use for many disabled children; and feedback from robot to computers, so that care-givers can analyze child activity patterns and document improvements.

**CEMINA (Communications, Education, and Information on Gender)
Rio de Janeiro, Brazil**

Inequality of access to information and communication is a continuing anxiety of the global community. The gap between rich and poor in ability to access the vast network of electronic communication technologies is surely an important factor in preventing poor persons from fully realizing their capabilities in the modern world. CEMINA, an activist non-profit organization based in Brazil with a mission of serving the community of poor Brazilian women, has successfully developed methods for improving access. These include implementing a technology vision of joining small radio stations broadcasting to a local community with telecentres where residents might gain internet and telephone access. The radio stations benefit from the internet access by being able to download digitized radio programming that CEMINA produces, designed to serve their core constituency of poor, rural women.

**Center for the Improvement of Working Conditions & Environment
Lahore, Pakistan**

Child labor in industrial-type settings is a scourge of poverty, and is concentrated in South Asia. The Center for the Improvement of Working Conditions & Environment (CIWCE) is a division of the Directorate of Labour Welfare Punjab, in Lahore, Pakistan. It was established in 1988 with grants from the ILO and UNDP. Their project to improve working conditions in the carpet weaving industry is an excellent example of how technologists can have an impact. CIWCE has developed an improved, ergonomic and, most important, adult-friendly loom. The loom makes it easier for adults to weave, improving incomes and thereby freeing their children to pursue schooling or less onerous activities in the household.

**Human Rights in China
New York, NY**

Electronic communication is quickly replacing print as the major avenue for obtaining information, especially news. Governments that heavily restrict the circulation of news have been developing extensive controls over electronic communication. Advocates of freedom of information, including human rights groups such as Human Rights in China (HRIC), have been forced to develop new technological strategies for delivering news and information to their audiences. HRIC is one of the premier sources, in China, for news about human rights in the country. HRIC delivers proxy server addresses to hundreds of thousands of subscribers in China, who can then access the full range of internet websites all over the world, including websites blocked by the government. HRIC also develops and delivers an interactive electronic newsletter that features contributions from Chinese citizens, as well as dispassionate analysis, and reaches hundreds of thousands.