

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Prairie Research Institute

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2011 International E-Waste Design Competition Winners Announced

Winners have been announced in the International E-Waste Competition. The competition is part of the Sustainable Electronics Initiative (SEI) at the University of Illinois at Urbana-Champaign.

College students and recent graduates from around the world were encouraged to submit their ideas for products or services. The entries were ideas that prevent e-waste generation through life-cycle considerations (E-Waste Prevention Category) or that incorporate e-waste components into a new and useful item (E-Waste Reuse Category). The competition is designed to prompt dialogue about product designs for environmentally responsible computing and entertainment.

The winners were announced at the Illinois Sustainable Technology Center (ISTC), the coordinating agency for the Sustainable Electronics Initiative. ISTC is part of the Prairie Research Institute at the University of Illinois.

A total of 29 entries were submitted; 12 in the Reuse category and 17 in the Prevention category. Jurors awarded monetary prizes to the top three projects within each category, along with three honorable mention awards. The first place winners will receive \$5000, second place is \$3000, and third place receives \$1000. A total of \$20,000 was awarded, which has been made possible through generous contributions by several sponsors, including Dell and Wal-mart.

Reuse Category Winners

- **Platinum (\$5000): CardioReach.** This project involved an electrocardiograph (ECG) device composed of components found in e-waste. From the project description: "Our plan is to acquire smart phones through donation programs and re-purpose them to become the CardioReach. The costs of developing our device will be minimal and significantly less than alternative ECG devices in developing countries. CardioReach will utilize the cellphone hardware for processing and transmission, while using some additional components for signal input and isolation. The software will include an open-source code and the ECG leads and tabs can be obtained from a separate source. The price of the CardioReach will be adjusted so that it can cover business expenses and be less than competitive products such as the GE Mac 400, which costs \$1400 as 'used' and is popular in Brazil, Russia, India, and China. The CardioReach technology is currently in early stage development, and a functional prototype is expected to be made by August 2011." This team was comprised of a group of biomedical engineering students from the Georgia Institute of Technology.
- **Gold (\$3000): SparkDrive by Team eWasteX.** The idea behind this project is the reuse of discarded hard-drives in a micro-energy generator which "functions as a technology platform for multiple applications including harnessing wind energy, powering small electronics such as cell phone chargers and desk lamps." The goal is provide "a platform for innovators in the developing world in communities specifically facing chronic lack of electrification." This project was submitted by a multinational group of graduate students, three of whom attend the University of Cape Town in South Africa and two who attend the Indian Institute of Technology.
- **Silver (\$1000): s:i.** "s:i" stands for "sound:illumination," and this concept involves a recycled laptop, iPod, cell and smart phone parts to create a portable audio and projection device. This entry was submitted by a student from New York University.

Prevention Category

- **Platinum (\$5000): Edentify.** This is a smart phone app used to scan the barcodes of electronic products and present the user with information on various aspects of product life cycle, from the manufacturing to post consumer phases. Recycling information would be included, and consumers could see point values for different products. The idea incorporates games and rewards into the point system in an effort to "create awareness and inspire e-waste prevention in a fun and immersive way." This project was submitted by three industrial design students from California State University at Long Beach.
- **Gold (\$3000): Dismantle.** By replacing screws with "drafted embossed fasteners" and employing a "master-lock" pin to hold the circuit board in place, this team has developed a laptop with can be fully disassembled in about 90 seconds. This compares to a case study of a Dell Inspiron 15 inch laptop, which takes about 12 minutes to disassemble. This allows for easier replacement of components and disassembly for recycling/reuse at the product's end of life. This team was comprised of two industrial design students from the Rochester Institute of Technology.
- **Silver (\$1000): Laptop Design for the future.** This group of students has formed a company with a business model using lease-based sales for new and used laptops and a goal of zero waste. They have proposed a laptop designed around modularity with a durable, lightweight aluminum unibody. Online services would be provided for sales, returns, support, upgrades and backup. This undergraduate team consists of four electronic engineering students and one student in product design and technology, all from the University of Limerick in Ireland.

Honorable Mentions

- **\$1000, Boombottle.** This design brings together reused speaker components, discarded plastic bottles and LED lights to create portable, rugged, waterproof, illuminated audio systems. The jurors felt that although it was entered in the Prevention category, this project was really more about the reuse of old electronic components than the prevention of e-waste generation. However, they appreciated the creativity, simplicity and effective presentation of the concept, as well as the fact that the products are already in production and in limited distribution. This design was submitted by a recent graduate in industrial and product design from Hong Kong Polytechnic University.
- **\$500, re:use.** This concept is a community-level approach to e-waste management described as "an organization of designers, engineers, construction managers, and urban planners that communicates with city officials and with the regional community to safely recycle consumer electronic excess and waste for use in public projects. This system creates a closed cycle that allows for the proper disposal, awareness, and discussion of e-waste as well as solutions to community needs." The idea includes the placement of e-waste collection bins throughout the city of Long Beach, California. Collected e-waste would be sent to a local recycling facility, separated, accumulated and eventually reprocessed and remanufactured for public project. An online forum would educate, increase awareness and allow citizens to submit suggestions for city improvements that could implement using feedstock from the collection infrastructure. The example provided was a suggestion for a park bench repair that might lead to the creation of a

new bench made from recycled plastic from used printers. This idea was submitted by a group of three industrial design students from California State University at Long Beach.

- **\$500, CircuitBreaker, the E-Waste Recycler.** This is a proposed industrial recycling machine that incorporates the use of nanotechnology to break chemical bonds in toxic molecules such as flame retardants, to render them inert and to reclaim rare earth metals. This idea was submitted by a team of four undergraduates from Arizona State University.

The competition was started at UIUC in the fall of 2009. In 2010, the competition was expanded so students from all over the globe were able to submit their projects and an online video. Each project was judged on the project description and video. The international scope was evident through students who submitted entries from six U.S. states as well as India, Hong Kong, England, Ireland, South Korea, and South Africa. The jury was comprised of a variety of experts, including:

- Roger Franz, Senior Research Engineer, UL Environment
- Susan Kingsley, Artist/Metalsmith/Activist
- Ki-Chol Nam, Associate Professor, Department of Industrial Design, College of Design and Art, Yeungnam University
- Bill Olson, Director, Office of Sustainability and Stewardship, Mobile Devices Business, Motorola, Inc.
- John Pflueger, Principal Environmental Strategist, Dell, Inc.
- Clive Roux, CEO, Industrial Designers Society of America

The videos of the winning entries will be shown on the websites of the e-waste competition www.ewaste.illinois.edu, www.istc.illinois.edu, www.sustainelectronics.illinois.edu, as well as [SEI's YouTube Channel](#).