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2012 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 and 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 during a ceremony on December 4, 2012 at the Illinois Sustainable Technology Center (ISTC), the coordinating agency for Sustainable Electronics Initiative. ISTC is part of the Prairie Research Institute at the University of Illinois. The ceremony was simultaneously broadcast as a webinar to allow participation of as many students who entered and other interested parties as possible. That webinar will be archived on the ISTC web site at http://www.istc.illinois.edu/about/sustainability_seminars.cfm.

A total of 19 entries were submitted; 10 in the Reuse category and 9 in the Prevention category. Jurors awarded monetary prizes to the top three projects within each category, along with one honorable mention award. The first place winners will receive $3000, second place is $2000, and third place receives $1000. A total of $12,000 was awarded, which has been made possible through generous contributions by Peter Mcdonnell (Friend level) and Dell (Platinum level).

Reuse Category Winners

- **Platinum ($3000): digitizer.** The digitizer is a revolutionary new product meant to revitalize film-based photography and bring it up to date in the digital era. It repurposes working film cameras by using a purpose built physical interface device coupled with proprietary software so that film based photographers can use their camera to capture digital images. The device includes an image sensor and image sensor card that will fit into the space normally occupied by the film and film canister within an analog camera. The hardware and software are upgradable and designed to adapt to most computer and camera formats. The purpose of the digitizer is to reduce future electronic waste of cameras while reusing materials that are electronic byproducts. It does this by reducing

the number of film-based cameras that are replaced by digital cameras, upgrading and adapting to new technologies without discarding and replacing currently working devices, and reusing often discarded electronic waste in its manufacture. By manufacturing the digitizer from e-waste components, chemicals such as lead, beryllium, arsenic, and mercury will also be kept out of landfills. The digitizer serves a twofold purpose by meeting the needs of an unfulfilled market of photographers and reducing electronic waste caused by outdated cameras. This concept was submitted by a pair of industrial design students from the University of Wisconsin-Stout: J. Makai Catudio and Ryan Barnes.

- **Gold ($2000): The Wake-Up Project.** The Wake Up Project is a highly marketable, easy to use, smart clock concept that tracks the users wake-up times using software on a reused internet router. The smart clock would also incorporate reused cell phone parts, as well as plastic recycled from e-waste. Using crossover cables connected to a built-in web interface, the user can set a time for the clock to sound every morning. There is an option to set up an entire schedule with variable settings for each day of the week. The device can be used with Outlook or iCal and the clock program is downloaded from the Wake Up website. The clock has a simple design face with one button that can function as a snooze or to turn the clock off. The Wake Up Project is a realistic solution to the e-waste problem that can secondarily provide consumer education opportunities. The Wake Up web site would have information about e-waste and how the consumer could play a role in solving the e-waste problem. The Wake Up Project team consists of three industrial design students from the University of Wisconsin-Stout: Danny Kopren, Sam Wellskopf, and Lennon TeRonde.
- **Silver ($1000): Fluorescence Microscopy Using A Recycled Paper Scanner.** This idea proposes the conversion of a commercial flatbed scanner into a fluorescence microscopy instrument, which is widely used to characterize biological events in diagnostic and research laboratories. The optical design allows for the scanner sensor array to be exploited as an imaging sensor without making major modifications to the recycled device. The proposed modifications have been engineered to be inexpensive and simple, yet they bring a high payoff in terms of performance of the scanner as an imaging instrument. Fluorescence microscopy is a cost efficient way to study behaviors of specific cell populations, which can then determine the presence of diseases and the source of the cause of disease. Scanner modified fluorescence microscopy is an even more cost efficient, proliferating means for the study of cell population. This device is meant to eliminate wastes and save lives. This concept was submitted by a recent graduate in electrical engineering (Dustin Gallegos), and two current students, one in biomedical engineering (Lillian Hislop) and the other in general studies (ZhanHao Xi), at the University of Illinois at Urbana-Champaign.

<u>Prevention Category Winners</u>

- **Platinum ($3000): EverCloud.** EverCloud is both a service and product. It is a framework which allows users to personalize their phone with features and styles specific to their taste. By investing the user in the design process, they become emotionally invested in the resulting product. An EverCloud phone is also unique in that

it is actually a portal to a data server--information is not stored on the local device. EverCloud is, in essence, a “cloud” phone. All applications and information associated with the phone are stored server side. This keeps the processing requirements of the phone low and the components responsible for computational tasks safe from the user’s level of responsibility and care. Since the software resides server side, it is always kept up to date. If problems arise with the device, such as a broken component, it can be replaced with an identical part or even with a new style of part if the user wants to change the device’s look or the experience of interacting with the device. As a design solution, the EverCloud system would eliminate waste created by hyper replacement of cellular devices, increase user satisfaction, and begin to shift the paradigm of cellular connectivity towards a sustainable future. This team was comprised of five industrial design students from Auburn University: Sean Kennedy, Christi Talbert, Dylan Piper-Kaiser, Sarah Caudle, and Daniel Piquero.

- **Gold ($2000): E3: Energy Efficient Electricity.** E3 is a home monitoring and manually controllable energy system. Owners of this device have the ability to lower their energy bill while simultaneously prolonging the life of their appliances and electronics. The lifespans of electronic devices are often shortened through overcharging and associated overheating. This is frequently the case with cell phones, for example. E3 would allow power to be turned off to a charger, eliminating overcharging and phantom energy use. Phantom energy is energy used by devices that are plugged in and drawing power even when the consumer is not using them. The E3 can be implemented in new buildings and retrofitted to older buildings. By installing a home meter and specialized outlets (made of recycled plastic and electronic components), the E3 can monitor home devices’ energy usage. By using a smart phone app, the owner may choose devices to disconnect when not in use to avoid phantom energy use, thus reducing CO_2 emissions. The app can also determine the best times to use an appliance or device to avoid peak hours. Continued use of the E3 can reduce energy consumption and costs to consumers. The concept was developed by three industrial design students from California State University at Long Beach: John Lee, Soyoung Bae, and Sam Sauceda.
- **Silver ($1000): loopbook—the future of computing.** The loopbook is designed to address the most important issues in the production and use phase of electronic devices. It is a laptop specifically designed to combat electronic waste by increasing the lifecycle of the device. Where possible all parts contained in the loopbook are constructed from reused and recycled components which will also be reconstituted for future loopbooks. The use of glass, aluminum, and other modular components enable the loopbook to focus efforts on reuse and closing the electronic waste loop. The unique core computing module (CCM), which contains the processor, memory, and storage, is upgradeable and removable. Thus, data and preferences can be carried on to the next step of the computer lifecycle should the body of the loopbook need to be repaired or replaced. The loopbook can perform as both a notebook and tablet, allowing consumers to experience both methods of computing with one device. The loopbook aims to change user behavior by creating a unique and attractive proposition of ownership and support for a new computing future. Loopbook was submitted by a recent graduate in product design and technology from the University of Limerick in Ireland, Damian Coughlan.

Honorable Mention

- **Sounds Amass.** SOUNDS AMASS is an audio amplifying device system designed for public sharing on a rental/lease program. It is specifically engineered to reuse second-hand components from the e-waste stream that can be easily replaced and removed. This makes it is easy to find alternative components and allows for lower overall maintenance costs. There are two versions of the device, Amass-Uno and Amass- Duo. Amass-Uno is blue and features smart phone docking and LED lighting. Amass-Duo is orange and equipped with a detachable megaphone, wireless microphone, and a loudspeaker system. Both models could serve as sound systems for small parties, street performances, small forums, protests, and social gatherings. The devices can be rented or leased from convenient stores and community halls. The consumer can check device availability via smart phone applications and the Internet. These devices are the easy and ecological answer to the social forum future. This concept was proposed by a recent graduate in industrial and product design from the Hong Kong Polytechnic University, Tai Ka Cheong.

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 Bangladesh, Canada, Chile, Hong Kong, India, Ireland, Turkey, and the United States. The jury was comprised of a variety of experts, including:

- Jason Linnell, Executive Director, National Center of Electronics Recycling (NCER)
- Bill Olson, Director, Office of Sustainability and Stewardship, Mobile Devices Business, Motorola, Inc.
- Steven Samuels, Former Brand & Design Manager for ReCellular, Inc.
- Kerstin Nelsen Strom, Ecodesign Section Chair, Industrial Designers Society of America (IDSA)
- Jennifer Wyatt, Environmental Scientist, Materials Management Branch, U.S. EPA Region 5

The videos of the winning entries will be shown on the websites of the e-waste competition at www.ewaste.illinois.edu, www.istc.illinois.edu, and www.sustainelectronics.illinois.edu, as well as SEI's You Tube channel (http://www.youtube.com/user/SEIatISTC?feature=watch).