Sustainable Technology Design Competition for Open Source 3-D Printers

Invitation

The technological evolution of 3-D printers, widespread Internet access, and inexpensive computing has allowed a new means of open design capable of accelerating sustainable development. A new study[1] has examined how open source 3-D printers, such as the RepRap (http://reprap.org), enable the use of open digital designs to fabricate sustainability technology. These open source appropriate technologies or OSATs, are easily and economically made from readily available resources by local communities to meet their sustainable developmental needs. Examples of OSATs include water pumps, solar powered lighting, and grain mills.

For this contest, we invite everyone to design sustainable technologies and their components for printing on open source 3-D printers.

Our goal is to facilitate an open exchange of 3-D designs of sustainability technologies that can be printed on a RepRap to meet human developmental needs.

Prizes!

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1st place $1000 Cash
2nd place $250 Cash
3 Runners Up
All prize winning teams will receive a copy of *Makers* by Cory Doctorow

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Who Can Enter?

Anyone. There is no cost to enter. Please read the full guidelines below for more details. Contestants will be asked to post their digital designs on Thingiverse under an open license (e.g. CC-BY-SA). It is your sole responsibility to secure any intellectual property rights which may exist in your Entry.

Schedule & Deadlines

Nov 1, 2011	Competition kick-off
Feb 1, 2012	Competition Closes for Submissions
Feb 15, 2012	Winner Announcement

Entry Guidelines

1. Create a free Thingiverse Account (http://www.thingiverse.com/register).
2. After inputing your profile. Click on "share more things" and upload your design. Thingiverse allows uploading of almost any filetype although for the purposes of the contest please upload the source files for your 3-D designs, not just the rendered output. Even if the source file is in a proprietary format, it will still be useful to someone. We encourage the use of open source software (http://www.appropedia.org/Open_source_engineering_software). Upload the source files for your project (e.g. the original CADs). This allows the potential for others to improve your design and to make what you designed.
3. Tag your design with "QAS contest"
4. Only designs submitted to Thingiverse from Nov. 1-Feb. 1, 2011 will be considered.

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[1] J. M Pearce, C. Morris Blair, K. J. Laciak, R. Andrews, A. Nosrat and I. Zelenika-Zovko, "3-D Printing of Open Source Appropriate Technologies for Self-Directed Sustainable Development", *Journal of Sustainable Development* **3**(4), pp. 17-29 (2010). http://www.ccsenet.org/journal/index.php/jsd/article/view/6984

The Judges

Prof. Joshua M. Pearce runs the Queen's Applied Sustainability Group and the Michigan Tech Open Sustainability Technology Laboratory.

Prof. David S. Strong is an NSERC Chair in Design Engineering and teaches multidisciplinary courses in design and innovation at Queen's University.

Prof. Richard Devon is a Professor of Engineering Design at the Pennsylvania State University, where he coordinates the Engineering Design Program.

Judging Criteria

1. Technical Viability of Printing

Can the design be printed on existing RepRaps? See www.reprap.org for technical specifications

2. Design Solution and Innovativeness

Aesthetics as well as a sensitivity to form follows function. The design must not only be visually appealing but be purposeful in its form factor and highly usable by the intended users. How innovative is the solution from a OSAT design perspective?

3. Sustainability Considerations

How well did the design solution address OSAT considerations? Sustainable development does not focus solely on environmental issues. Sustainable design solutions will address the interdependent and mutually reinforcing pillars of sustainable development understood to be: 1) Economic development, 2) Social development, and 3) Environmental Stewardship - which is the concept of responsible management of all of the natural resources for the benefit of present and future generations of people, plants, animals, and the entire living Earth. Finally, solutions should carefully consider and demonstrate thoughtfulness, investigation, and validation regarding the capabilities, limitations and needs of the individual user and of multiple users. Designs should advance, directly or indirectly, the safety, well-being, and performance of human beings.

4. Feasibility & Concept Validation

How realistic is it? Can it be manufactured in the field in the near-term with a solar powered RepRap? Did the entrant do a sufficient amount of investigation regarding what is possible from a functional and manufacturing perspective? Are the research sources cited, varied, and valid? Did the entrant provide proper citations and credit for research and intellectual property referenced?

5. Presentation

Has the entrant effectively presented the concept? Are entry materials neat and well organized? Has the entrant made effective use of visualization tools? How well did the entrant communicate the ideas and solution using text and imagery? How well did the entrant make use of media to express ideas?