

SOURCE



The Open Hardware Revolution

Alicia Gibb

BugLabs

NYC Resistor

@pipix

Ayah Bdeir

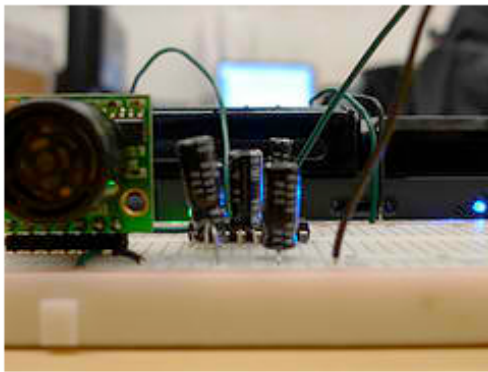
Creative Commons

littleBits

@ayahbdeir

Alicia Gibb

Bug Labs, Director of R&D Lab
NYCResistor

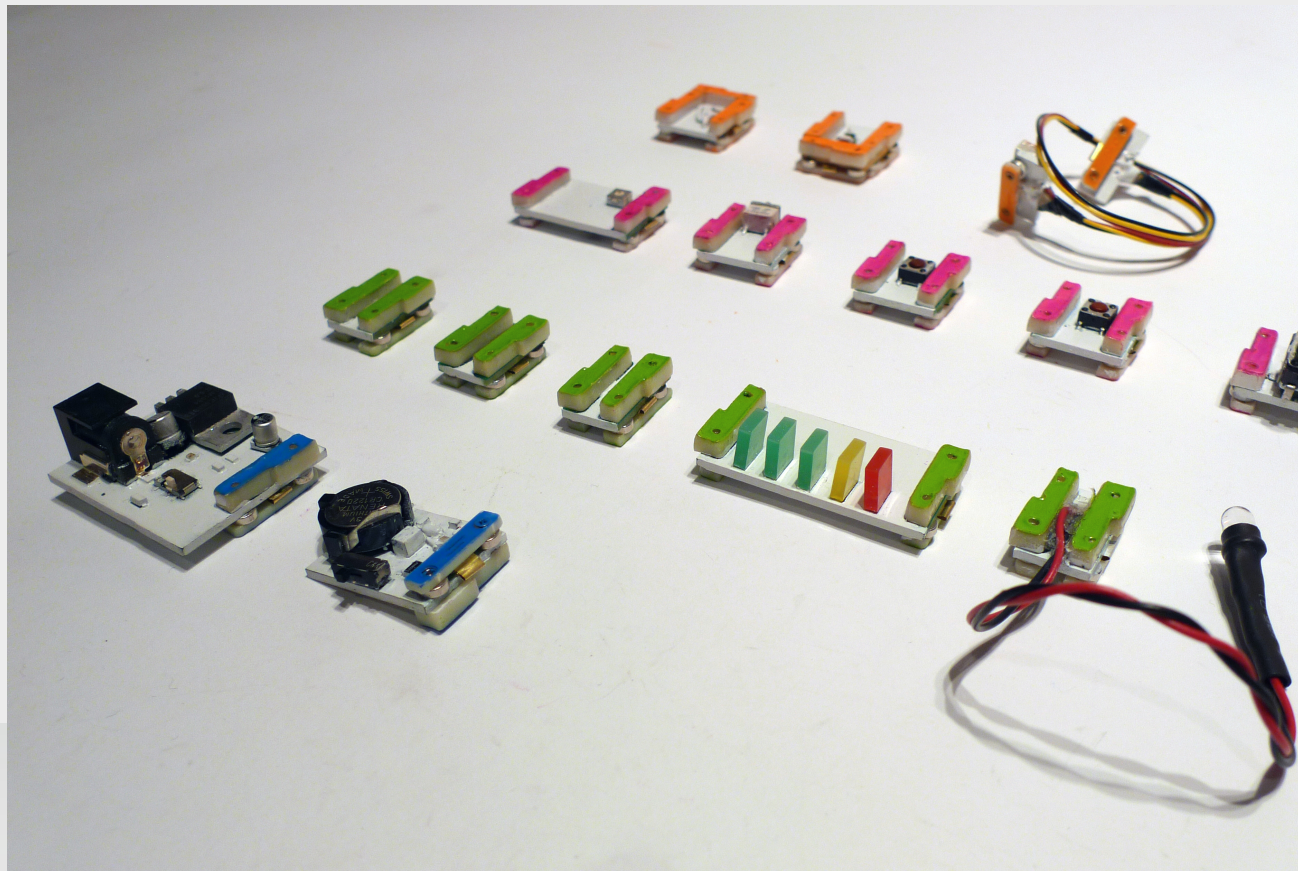


Ayah Bdeir

Interactive Artist, MIT Media Lab

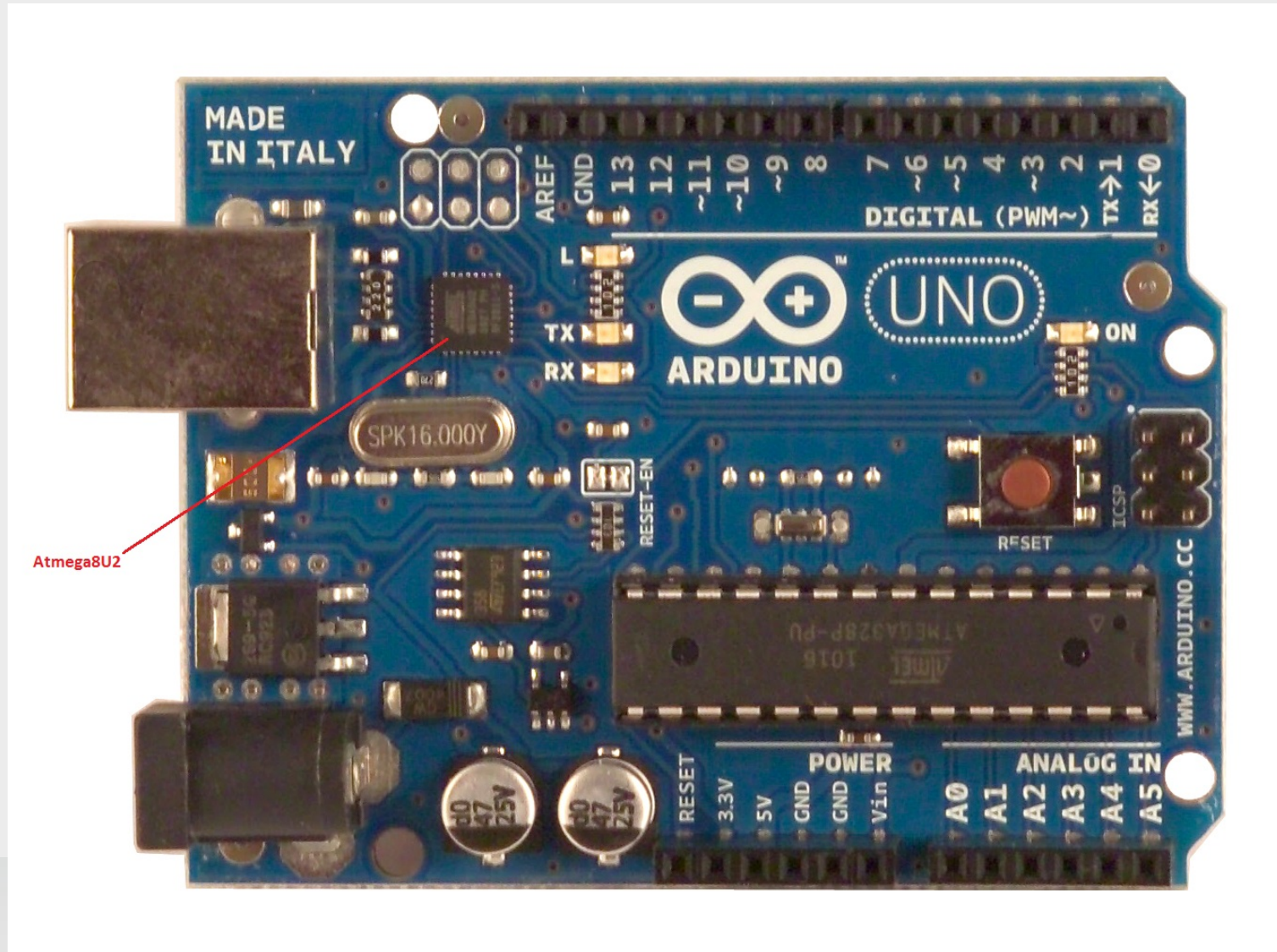
Fellow at Creative Commons

Founder of littleBits.cc

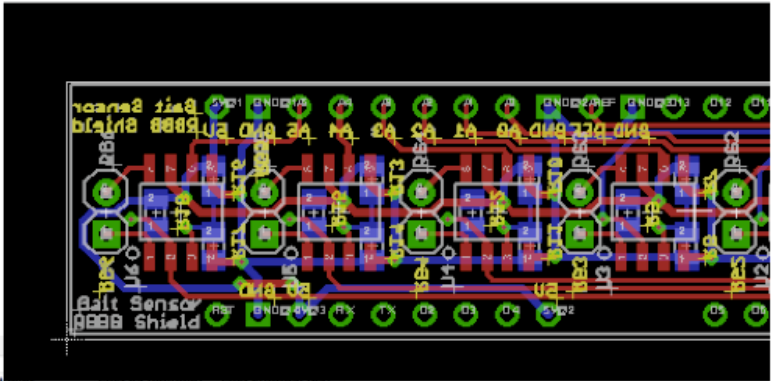
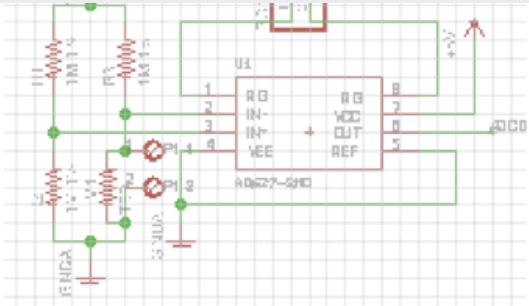


WHAT IS OPEN SOURCE HARDWARE

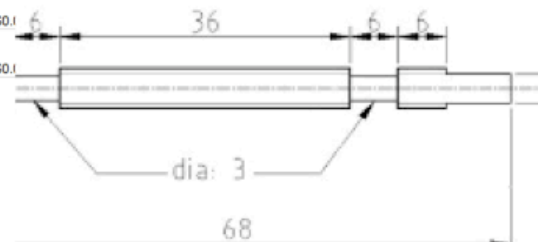
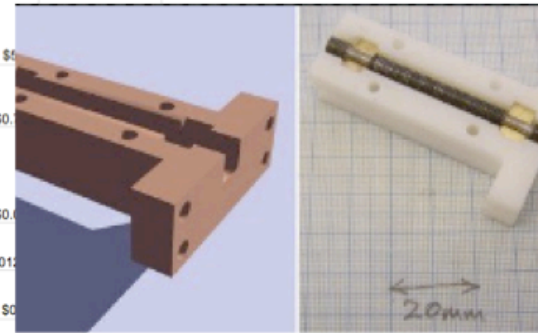
A Key Example



WHY IS THIS
HARD?



	A	B	C	D	E	F			
1	REDBEE Core								
2	part function	manufacturer part #	package	critical spec	REFDES	vendor part #	multiplier	cost ea (volume)	cost subtotal (ea)
3	FreeScale integrated microcontroller and radio	FreeScale MC13224V	99-LGA (9.5mm x 9.5mm x 1.1mm)		U1	mouser 841-MC13224V	1	\$0.	
4	External Flash Memory	SST SST25VF020-20-4C-SAE (256k x 8)	SOIC-8	SPI Flash, 8-SOIC C1 and C2 are SAME AS COMMUTATION CAPACITORS - C7, C8 and C9- THIS IS AN ALTERNATE PART # FOR REFERENCE	MEM1	mouser 804-25VF020CSAE	1	\$0.	
5	decoupling cap	1uF capacitor network, 2 x 0805	2 x 0805		C1, C2, C7, C8, C9	digkey 490-3413-1-ND	5	\$0.	
6	xtal capacitors	12pF capacitor, 0603	0603		C5, C6	digkey PCC120ACVCT-ND	2	\$0.01	
7	alternative xtal	24.000MHz xtal	SM49	SM49 footprint - in use on the Econotag	X1	digkey 535-9701-1-ND	1	\$0.	
8	indicator LED (TX)	red LED, 0805	0805	R0805, D2 is the TX led, D14-D17 are undercarriage LEDs	D2, D14, D15, D16, D17	digkey: 754-1132-2-ND	5	\$0.1	
9	indicator LED (RX)	green LED, 0805	0805	CHANGE THIS TO THE PLCC FORMAT FOR COST-REDUCTION	D4	digkey: 160-1179-1-ND	0	\$0.1	
10						digkey			



WHY IS THIS
IMPORTANT?



Opening Hardware Workshop

March 17th, Eyebeam

By: Ayah Bdeir (littleBits),
John Wilbanks (CC),
Thinh Nguyen (CC)

OPENING HARDWARE

A workshop on legal tools
for open source hardware



OPEN SOURCE HARDWARE DEFINITION

OSHW Definition

Open Source Hardware (OSHW) Definition 1.0

[edit]

OSHW Draft Definition 1.0 is based on the [Open Source Definition](#) for Open Source Software and [draft OSHW definition 0.5](#). The definition is derived from the [Open Source Definition](#), which was created by Bruce Perens and the Debian developers as the Debian Free Software Guidelines. Videos and Documentation of the Opening Hardware workshop which kicked off the below definition are available [here](#). Please join the conversation about the definition [here](#).

Introduction

Open Source Hardware (OSHW) is a term for tangible artifacts -- machines, devices, or other physical things -- whose design has been released to the public in such a way that anyone can make, modify, distribute, and use those things. This definition is intended to help provide guidelines for the development and evaluation of licenses for Open Source Hardware.

Hardware is different from software in that physical resources must always be committed for the creation of physical goods. Accordingly, persons or companies producing items ("products") under an OSHW license have an obligation to make it clear that such products are not manufactured, sold, warranted, or otherwise sanctioned by the original designer and also not to make use of any trademarks owned by the original designer.

The distribution terms of Open Source Hardware must comply with the following criteria:

1. Documentation

The hardware must be released with documentation including design files, and must allow modification and distribution of the design files. Where documentation is not furnished with the physical product, there must be a well-publicized means of obtaining this documentation for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The documentation must include design files in the preferred format for making changes, for example the native file format of a CAD program. Deliberately obfuscated design files are not allowed. Intermediate forms analogous to compiled computer code -- such as printer-ready copper artwork from a CAD program -- are not allowed as substitutes. The license may require that the design files are provided in fully-documented, open format(s).

2. Scope

The documentation for the hardware must clearly specify what portion of the design, if not all, is being released under the license.

3. Necessary Software

If the licensed design requires software, embedded or otherwise, to operate properly and fulfill its essential functions, then the license may require that one of the following conditions are met:



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Open Source Hardware
by Nate | October 08, 2010 | 62 comments

Alicia Gibb and Ayah Bdeir put together and hosted the **Open Hardware Summit** a few days before **Maker Faire New York**. It was an amazing event! Almost all the usual suspects were there, too many to list here, but it was great to hear from everyone (over 300 people attended) on their thoughts on what Open Source Hardware should be. There is a very active group of folks (namely **Windell Oskay**, **Dave Mellis**, and **Phillip Torrone**) who are hashing out what OSHW should be, what it should stand for, how we should define it as a group. It's fairly amazing to me to watch our community debate earnestly and tirelessly towards this goal. I am proud to be a small part of a group that can get along so well and create such amazing art, ideas, and businesses.

« Delirium wheel trophy

^ Main

Arduino for Programmers >> class at Crash Space

Open-source hardware statement of principles and draft definition 0.4



A new statement of principles and draft definition 0.4 is up for Open-source hardware – your feedback and participation is needed! After the Open-source Hardware summit one of the requests was for all of us to figure out an "overview" of what/why we do this. We think we have a good start based on what many people have helped outline – here's the draft:

Open Source Hardware (OSHW) Statement of Principles (Draft)

Open source hardware is hardware whose design is made publicly available so that anyone can study, modify, distribute, make and sell the design or hardware based on that design. The hardware's source, the design from which it is made, is available in the preferred format for making modifications to it. Ideally, open source hardware uses readily-available components and materials, standard processes, open infrastructure, unrestricted content, and open-source design tools to maximize the ability of individuals to make and use hardware. Open source hardware gives people the freedom to control their technology while sharing knowledge and encouraging commerce through the open exchange of designs.

We're also quickly approaching a 1.0 of the Open-source hardware definition. [0.4 is here, take a look!](#)



HOME → Blog

Open source hardware – (OSHW) Draft Definition version 0.3 and




Today is a big day for anyone who designs (or builds) open source hardware. For about 5+ years or so the term "open source hardware" has been used more and more to generally describe projects in which the creators have decided to completely publish all the source, schematics, firmware, software, bill of materials, parts list, drawings and "board" files to recreate the hardware – they also allow any use, including commercial. Similar to open source software like Linux, but this hardware centric.

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Open Source Hardware gets its Constitution

Open Source Hardware community finally gets its Constitution

By Tim Stevens  posted July 14th 2010 9:35AM



They, the people of the [open source hardware movement](#), in order to form a more peaceful community for sharing, establish bigger and cuddlier [Chumbies](#), ensure continued [Arduino](#) creativity, promote the general welfare, and secure the blessings of hackery to ourselves and our posterity, have established the Open Source Hardware Draft. It's a sort of 11 commandments for those who would share or use an open source hardware design, indicating what documentation is required, how derived works must be allowed and, perhaps most importantly, that each use must include attribution to those founding engineers who came before. Its current version, 0.3, was ratified yesterday by a group of dignitaries including folks behind the [Arduino](#), [Adafruit](#), and [Chumby](#), along with plenty of other underground industry big-wigs.

OSHW Licence



CERN Open Hardware Licence

[Overview](#)

[Activity](#)

[Mailing List](#)

[News](#)

[Documents](#)

[Wiki](#)

CERN Open Hardware Licence

[History](#)

The CERN Open Hardware Licence was written for CERN designs hosted in the OHR and can also be used by any designer wishing to share design information using a licence compliant with the [OSHW definition criteria](#).

OPEN HARDWARE SUMMIT

OHS 2010



OHS 2011



September 15th, 2011 –
NY Hall of Science

Openhardwaresummit.org

GOALS

CENTRALIZE A
COMMUNITY

DIY Open Source Companies (partial)

Adafruit

Arduino

Beagle Board

Bug Labs

Centeye

Chumby

DIYdrones

DIYLILCNC

Evil Mad Scientist

GoGoBoard

inMojo

LilyPad

mcu Labs

Makerbot

MITRE

Parallax

Rachel's Electronics

Rogue Robotics

Seed Studio

Sparkfun

SnootLab

Texas Instruments

ThingM

Wiring

WillowGarage

XiVO IPBX

GOALS

MAKE IT
ACCESSIBLE



GOALS

MAKE IT SEXY

We added some bling



Source: Windel Oskay's design for the 2011 OHS badge

We added a red carpet



Source: Mateo Zlater's design for the 2011 OHS red carpet walk

The Anthrax Killer:
Did They Get
the Wrong Guy?

The Cocaine
Smuggler's
Submarine

10 Cool New
Gadgets, Tested
and Rated

INSIDE
THE SHAKE-UP
AT GOOGLE

WIRED

The DIY
Revolution
Starts Now

HOW TO Make Stuff

25 AWESOME PROJECTS

under construction | apr 2011

If You
Can
Think It,
You Can
Build It!

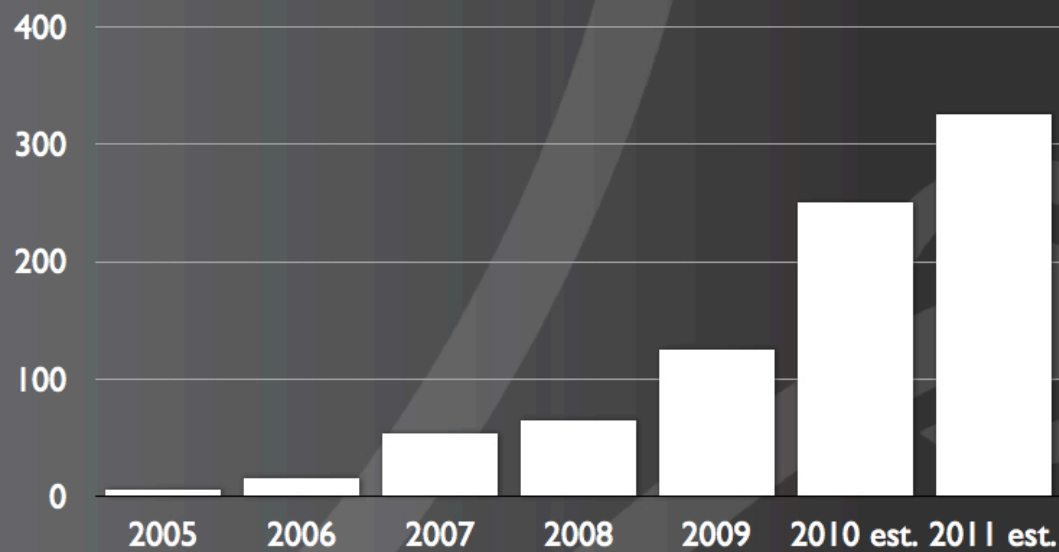
Maker here
Liam Neeson



STATE OF OPEN HARDWARE BUSINESSES

Open source hardware projects:

■ Total projects



Source: OSHW annual - Torrone, MAKE magazine

Source: Phil Torrone, Foo Camp

Make: adafruit industries

Industry

Verizon

Google

AT&T

Sprint

Texas Instruments

Microsoft

OPENWASHING?

Industry Openwashing

Accenture + Open Source Hardware

BusinessWeek

BusinessWeek recently published an article entitled "[Accenture Goes the Tailor-Made Route](#)" by Damian Joseph. It describes how Accenture is working with Bug Labs to develop a number of compelling hardware + service

offerings that they believe will drive significant interest from their customers and prospects. In fact, Accenture's Andy Zimmerman was already thinking about how this could work last year when

he posted "Build y
nd appreciate th
ut one thing that
f the Open Sourc
reate and publish
ne verticals they i
usiness model th
o Red Hat's rever

AT&T Announces Plans to Open Innovation Centers to Spur Development of New-Generation Mobile and Wired Broadband Applications, Devices



Facilities to Support AT&T LTE Trials and Testing Beginning Later this Year

DALLAS, Feb. 18 /PRNewswire-FirstCall/ - development of next-generation devices, e broadband.

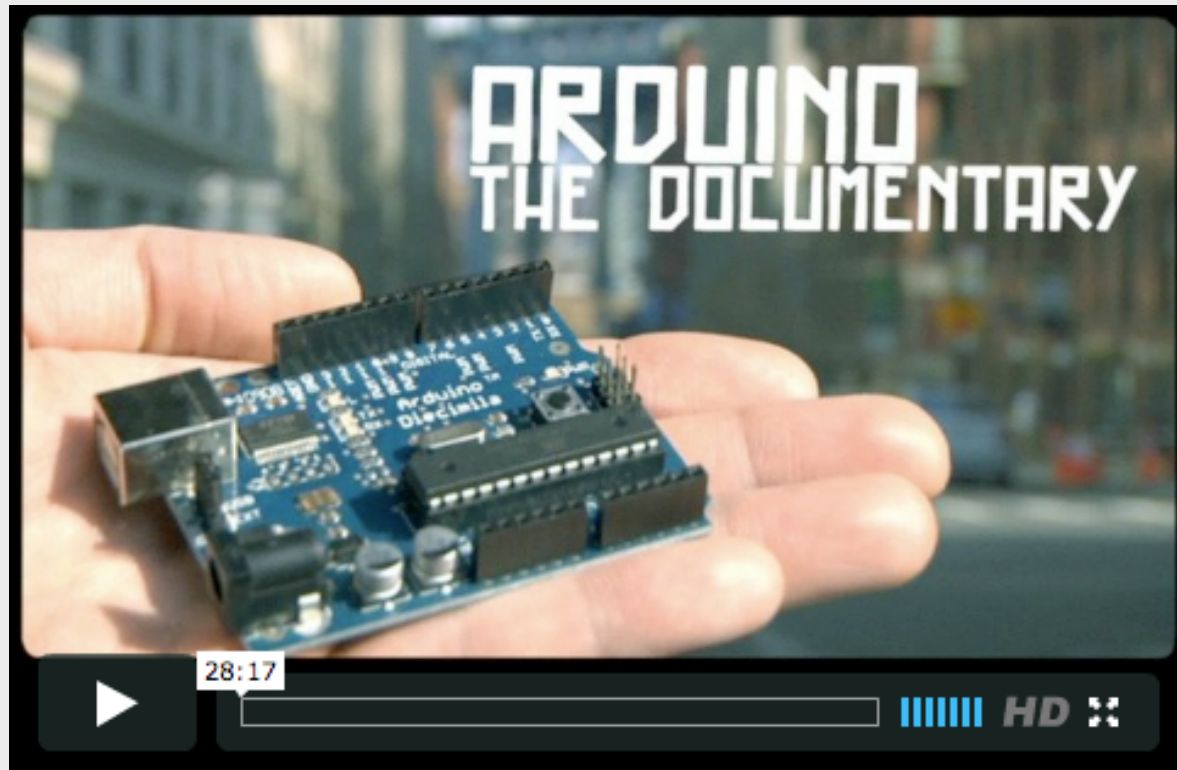
Bug Labs and Pitney Bowes Announce First Modular, Mobile Device Development Platform with Hardware-level Security Protection

BUGsecure offers enterprises a flexible, trusted platform for secure wireless device innovation

NEW YORK, March 14, 2011 - [Bug Labs](#), an open source hardware and software provider that gives companies the tools and support needed to prototype, pilot and produce innovative networked devices with ease, and [Pitney Bowes Inc.](#) (NYSE: PBI) today announced the industry's first modular, mobile device development platform incorporating hardware-level

SUCCESS STORIES

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The head of Stephen Colbert by [Colbert](#)



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Description

At long last, everyone in the world (ok everyone who has access to a 3d printer) can have their own bust of America's greatest entertainer and statesman, Stephen Colbert.

Even better, you can use this model and your favorite 3d modeling software to add Mr. Colbert's face to objects which were formerly lacking in Colbert heads, like bannisters, umbrella handles, toothpaste squeezers, and rabbits. (To name a few.)

Made with a Polhemus 3d scanner at the Colbert set on 6/6/2011.

Instructions

"HighRes" versions are very high-res. The LowRes and LowerRes versions still have a lot of detail and are more reliable, so start with those.

This bust should print well on a MakerBot Thing-O-Matic even without support material.

Check out [polhemus.com/](#) for more information about their great scanners.

Other People's Copies

[view more](#)

 By: fromar	 By: MBCook	 By: [unintelligible]	 By: [unintelligible]
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Other People's Variations

[view more](#)

 by snover	 by JamieClay	 by OhadReiter	 by OhadReiter
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Success Stories

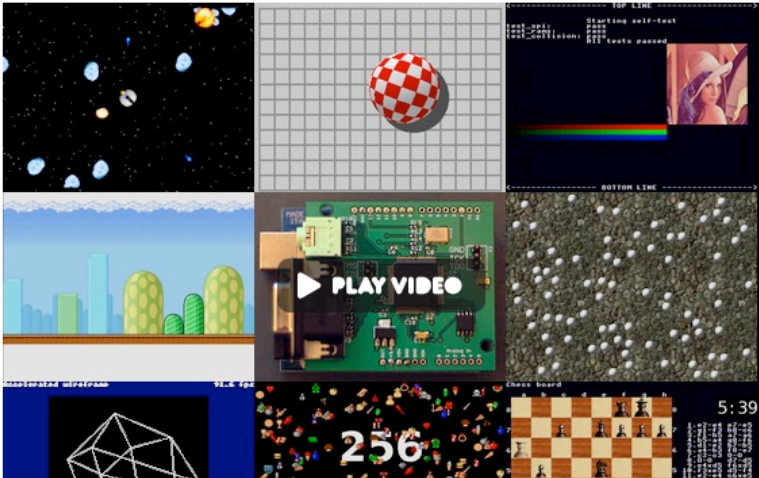
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BLOG HELP SIGN UP LOG IN

Gameduino: an Arduino game adapter

A Technology project in Pescadero, CA by James Bowman • [send message](#)

PROJECT HOME UPDATES 11 BACKERS 471 COMMENTS 116







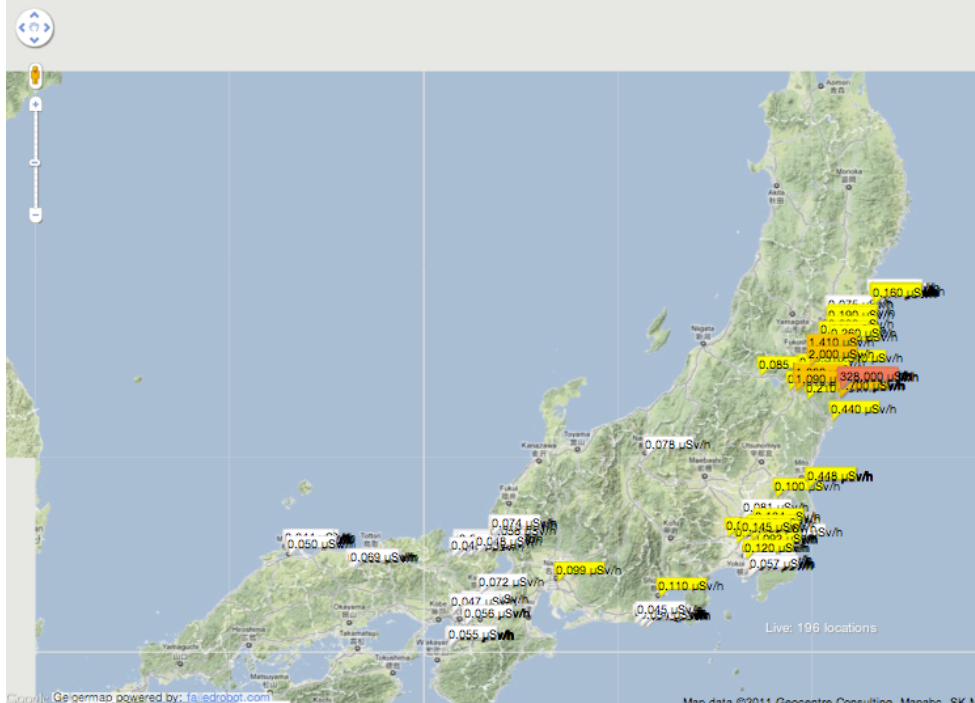
471
BACKERS
\$38,297
PLEGDED OF \$3,333 GOAL
0
SECONDS TO GO

FUNDING SUCCESSFUL
This project successfully raised its funding goal on April 1.

Success Stories

List of Affordable Geiger Counters

Image	Manufacturer	Model	Price	GM tube
	SparkFun Electronics	SEN-09848	\$149.95	LND 712
	Libelium	Radiation Sensor Board for Arduino + Geiger Tube	€95.00	SBM-20
	Seeed Studio	?	?	J408y
	Tokyo Hackerspace	Tokyo Hackerspace/RDTN Geiger Shield	?	External geiger tube carrier board. Targeting low/med/high end tubes



BRANDING

LOGO

OSHW Logo – Public Vote

OSHW LOGO: VOTE!

3- Iconographic Microchip Designer: Nic



14- OpnKy Designer: ercwtsn



16- Golden Orb Author: Macklin Chaffee



28- copyleft chip Designer: Dr Snaut



34- OSHW Connections Designer: dseisner



38- Debreuil design v2 Designer: debreuil



52- OSHW Bot Designer: David Siren Eisner



53- Osmosis Designer: Vincent C



84- Open-Key Designer: Jack Qiao



95- Geared Designer: Fred PRATE



Over 9000 votes!

OSHW Logo - Winner

Submitted by: Golden Orb
Author: Macklin Chaffee
Date: February 11th, 2011



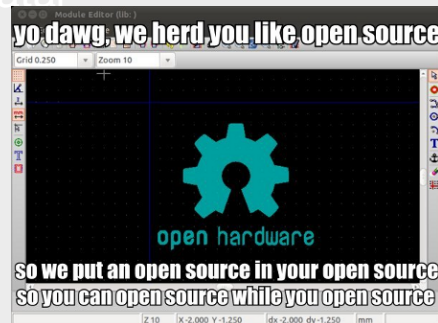
OSHW Logo – community contributions

- Kerning cleanup
- AI files – havehalf
- Eagle ULP script - WestfW - oshw-logo.ulp
- Revised ULP prompts user with a dialog for line width & size - Shimniok
- Eagle Library - Andrew Tergis - OSHW.lbr
- gEDA files - Evil Mad Scientist
- SVG files - Brandon Stafford



3D rendering- Jase

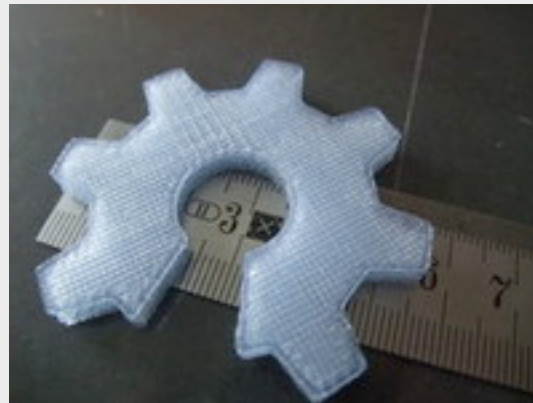
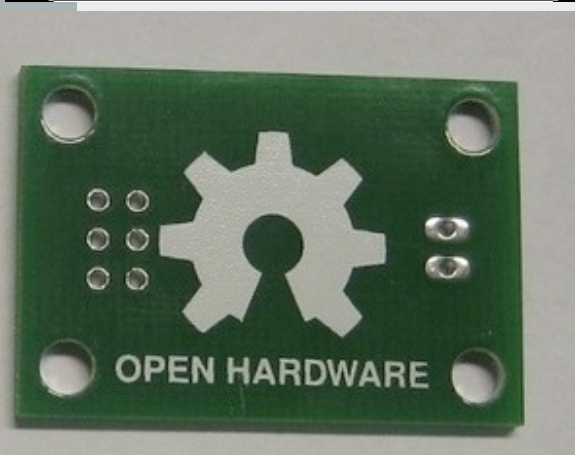
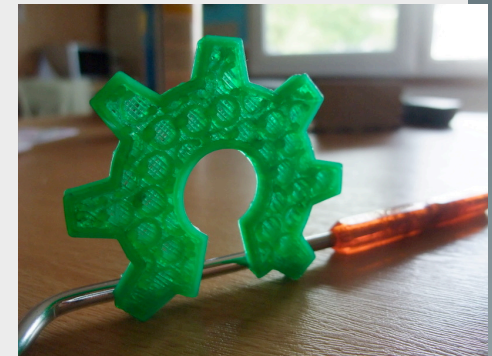
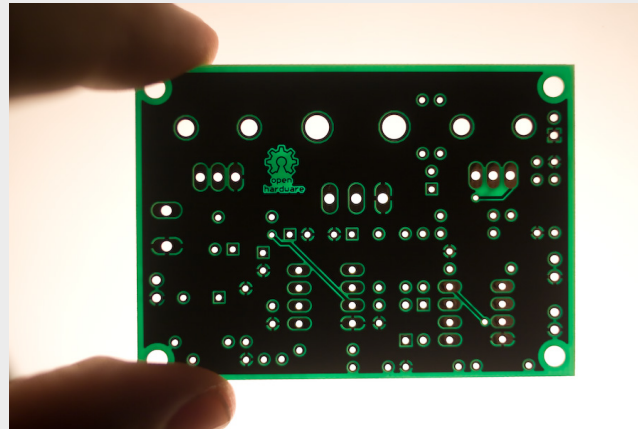
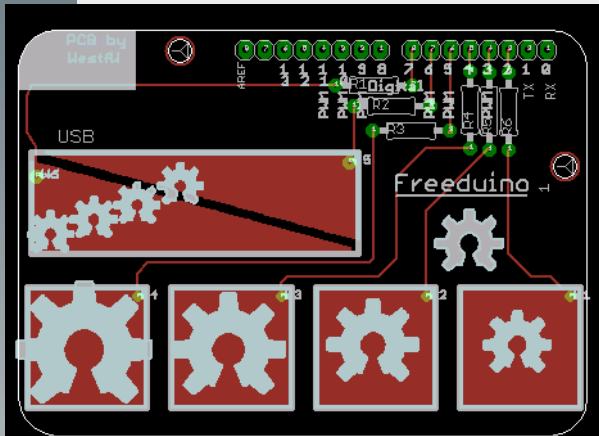
Logo cleanup - Mateo Zlatar



openScad - clothbot

Kicad – Wayne and Layne

OSHW Logo - applications



Logo Decal Jason Kruse,
Mr. Decals – Over 500
decals sent free

Thank you!



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