Open Hardware
&
Embedded Systems

Open Hardware

Open source hardware (or open hardware) is hardware built from design information that have been made available for public use at no charge. Such information can include documentation, schematic diagrams, construction details, parts lists and logic designs.

Open Hardware

Ideally, open hardware uses readily-available components and materials, standard processes, open infrastructures, unrestricted content, and open-source design tools to maximize the ability of individuals to make and use hardware.

Open hardware gives people the freedom to control their technology while sharing knowledge and encouraging commerce through the open exchange of designs.
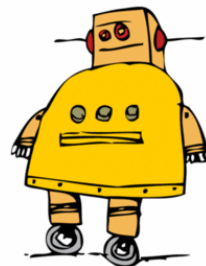
Open Hardware

There are many examples of open hardware projects:
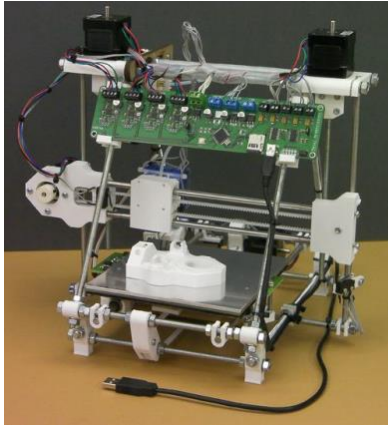- 3D printers
- Smartphones
- Prototyping boards

But also:
- Washing machines
- Eolic generators
- …

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Open Hardware – Examples

RepRap

RepRap was the first of the low-cost 3D printers, and the RepRap Project started the open-source 3D printer revolution.

References:
http://reprap.org/wiki/RepRap

Open Hardware – Examples

Openmoko™ & openphoenux

These two open hardware projects present smartphones with an open source software stack based on Linux.

References:
http://en.wikipedia.org/wiki/Openmoko_Linux
http://wiki.openmoko.org/wiki/Main_Page
http://projects.goldelico.com/p/gta04-main/
http://www.openphoenux.org/

Open Hardware – Examples
Project Ara - Phoneblocks

Led by Motorola's Advanced Technology and Projects group, Project Ara is developing a free, open hardware platform for creating highly modular smartphones.

References:

http://motorola-blog.blogspot.it/2013/10/goodbye-sticky-hello-ara.html

Open Hardware – Examples
BeagleBone Black

BeagleBone Black is a community-supported development platform for developers and hobbyists.
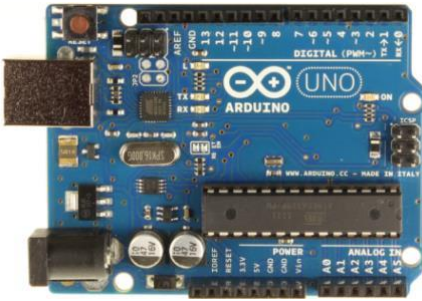It's based on a ARM® Cortex-A8 and can run Linux.

References:

http://beagleboard.org/

Open Hardware – Examples

Arduino

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists and anyone interested in creating interactive objects or environments.

References:

http://arduino.cc/

Open Hardware – Examples

Arduino

References:
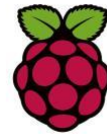
http://arduino.cc/en/Main/Products

Open Hardware – Examples
RaspberryPI

The Raspberry Pi is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools.

References:

http://www.raspberrypi.org/

Open Hardware – Examples
Tessel

Tessel is a microcontroller that runs JavaScript.
Tessel's hardware designs are open source hardware (CC BY-SA). Its firmware and compiler will be open source software (MIT licensed) upon release.

References:

http://tessel.io/

Parallella

References:

http://www.parallella.org/

The Parallella project's aim is to make parallel computing accessible to everyone.
The Parallella platform is based on the Epiphany multicore chips. Each chip consists of a scalable array of simple RISC processors programmable in C/C++ connected together with a fast NoC within a single shared memory architecture.

Other projects