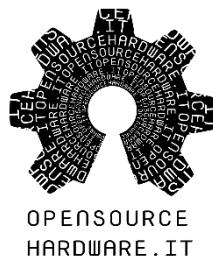


# PROGETTARE HARDWARE OPENSOURCE

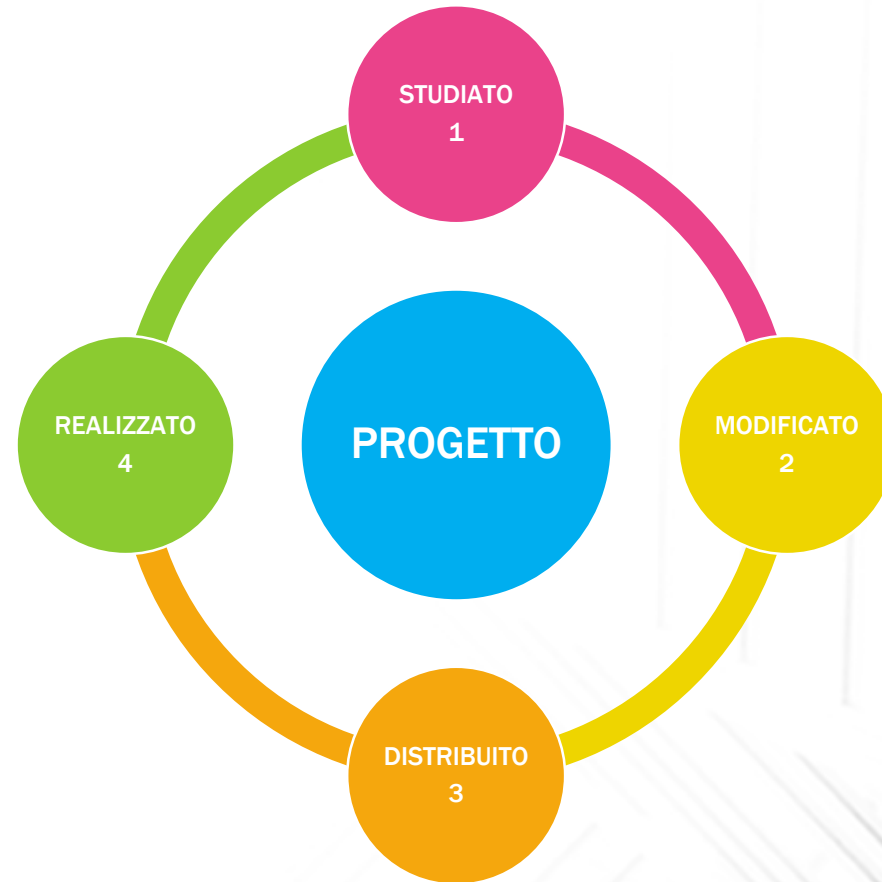
Laura Genovesi



**FABLAB  
TOSCANA**

# PRINCIPI DELL'OPEN HARDWARE

- Progetto pubblico
- Realizzato nel formato migliore per essere modificato
- Componenti e materiali facilmente reperibili
- Processi standard di produzione
- Commercializzabile



# ADUINO

- Piattaforma di prototipazione opensource sia software che hardware
- Nato ad Ivrea nel 2005 da un'idea di Massimo Banzi e sviluppato con la collaborazione di professori e studenti dell'Interaction Design Institute



# ARDUINO

Nato dalla necessità di avere un prodotto versatile e a buon mercato per lo sviluppo dei progetti

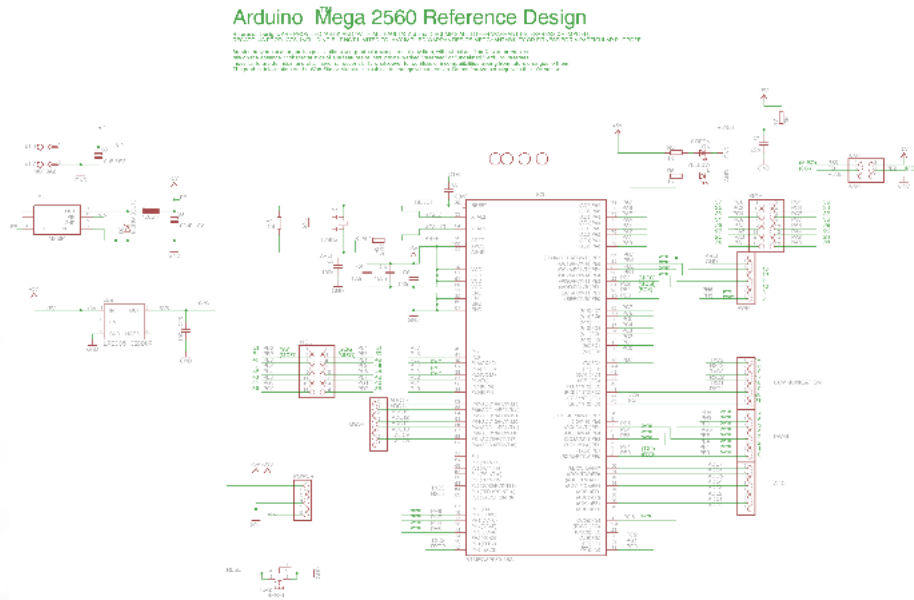
- Buon mercato: parlando di hardware teniamo presente che l'utilizzo del prodotto da parte dell'utente finale ha un costo in quanto bene tangibile, pertanto durante la progettazione è necessario cercare di utilizzare materiale non eccessivamente costoso e facilmente reperibile
- L'hardware deve essere comprensibile, e ben documentato per permetterci di poterlo rifare ed eventualmente adattare alle nostre esigenze
- Il progetto Arduino ha un'ampia documentazione sul proprio wiki e questo permette a tutti di poter aggiungere informazioni e tutorial
- Esiste anche un forum dedicato



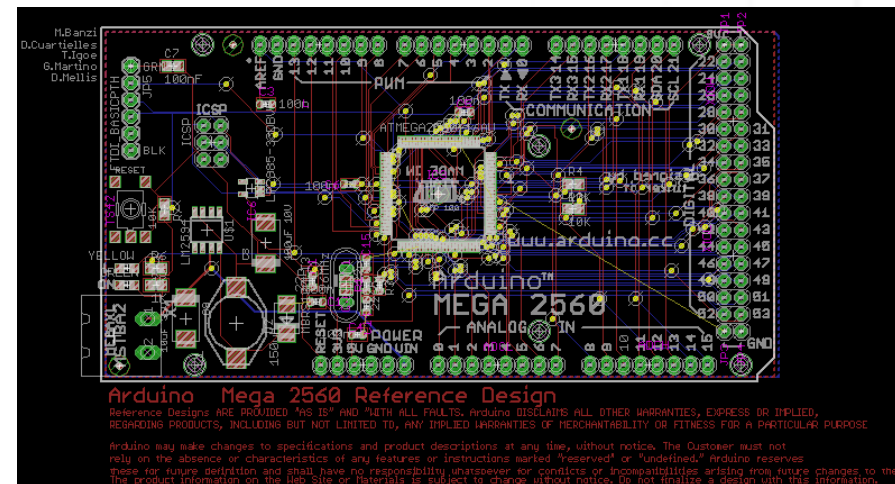
# ARDUINO MEGA 2560

**Sia gli schemi che i file per creare il PCB sono scaricabili dal sito**

## SCHEMA



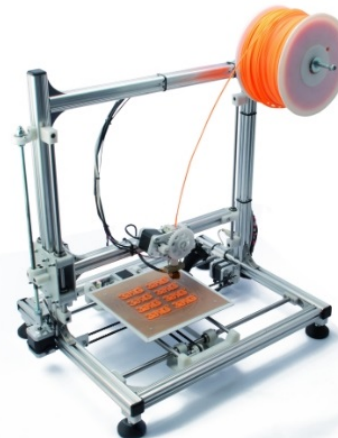
## BOARD





# REPRAP

- Progetto collaborativo per la realizzazione di una stampante 3D a basso costo
- Il blog fondato nel 2005
- Sul WIKI si è creata una grande community dove sono nate molte varianti
- Il team distribuisce gratuitamente i progetti e le informazioni per costruire la macchina

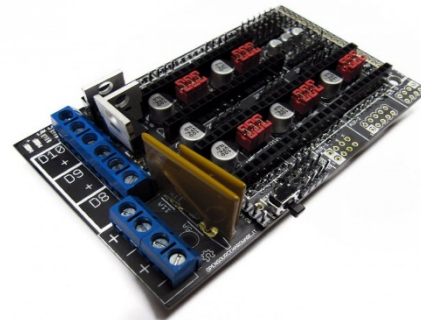


# RAMPS

- Progetto opensource prodotto da Johonny Russel per UltiMachine USA
- In commercio si trova quella cinese di bassa qualità
- Noi l'abbiamo modificata e migliorato il pcb



Made in china

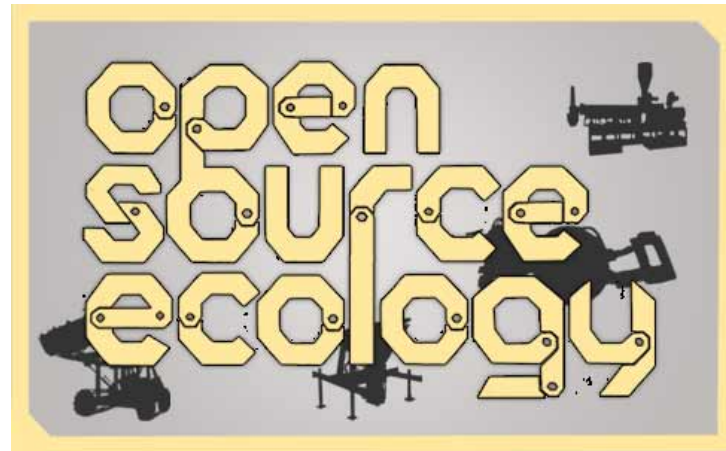


Made in italy



# OPEN SOURCE ECOLOGY

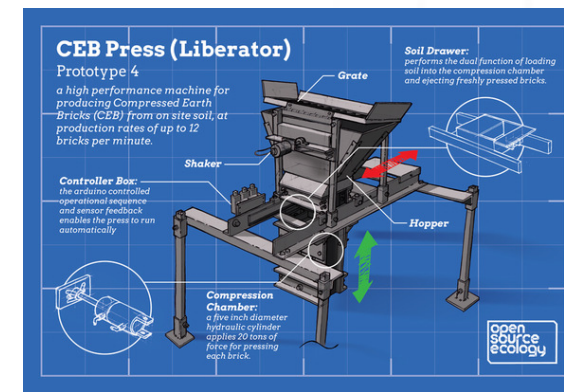
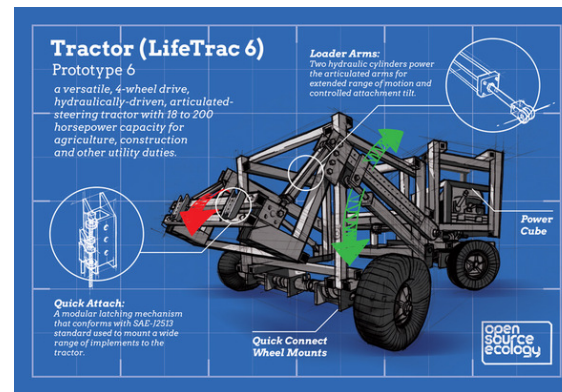
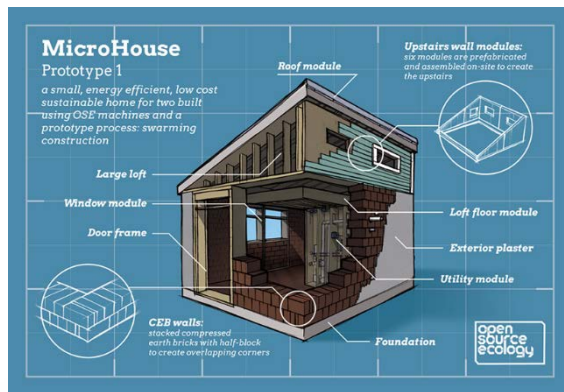
- Progetto nato nel 2003 da Marcin Jakubowski in USA
- Comunità che ha sviluppato una piattaforma collaborativa per lo sviluppo di progetti open che riguardano l'agricoltura, l'energia e la sostenibilità.





# OPEN SOURCE ECOLOGY

- Alcuni esempi...



**COME E' STATO POSSIBILE**





## Cos'è un WIKI...

- Piattaforma di condivisione della documentazione dove dato un argomento è possibile modificare liberamente il contenuto
- E possibile accedervi semplicemente
- Ogni modifica è comunque memorizzata

23/10/2015

Revision history of "RepRap" - RepRapWiki

View logs for this page

Browse history

From year (and earlier): 2015 From month (and earlier): all Go

Diff selection: Mark the radio boxes of the revisions to compare and hit enter or the button at the bottom.  
Legend: (cur) = difference with latest revision, (prev) = difference with preceding revision, m = minor edit.

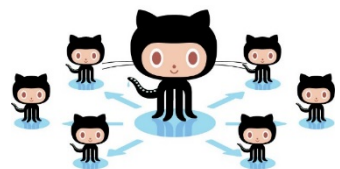
(Latest | Earliest) View (newer 50 | older 50) (20 | 50 | 100 | 250 | 500)

Compare selected revisions

|                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> (cur   prev) | <input checked="" type="radio"/> 10:13, 23 July 2015 Glenn (Talk   contribs) . . (3,956 bytes) (-21) . . (linkchg)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 04:32, 20 July 2015 AndrewBCN (Talk   contribs) . . (3,977 bytes) (+4)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 04:29, 20 July 2015 AndrewBCN (Talk   contribs) . . (3,973 bytes) (+4)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 04:27, 20 July 2015 AndrewBCN (Talk   contribs) . . (3,969 bytes) (-52)  |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 12:43, 10 June 2015 XoanSampaño (Talk   contribs) . . (4,021 bytes) (-16) . . (Undo revision 149847 by Tomjones (talk) SPAM)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 08:33, 10 June 2015 Tomjones (Talk   contribs) m . . (4,037 bytes) (+16)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 07:51, 23 May 2015 Robotz (Talk   contribs) m . . (4,021 bytes) (-2)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 07:51, 23 May 2015 Robotz (Talk   contribs) m . . (4,023 bytes) (+2)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:14, 15 February 2015 AndrewBCN (Talk   contribs) . . (4,021 bytes) (+816) . . (Undoing several revisions that deficed the Home Page of the Wiki!)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:13, 15 February 2015 AndrewBCN (Talk   contribs) . . (3,205 bytes) (-28) . . (Undo revision 144747 by Elastostar (talk))  |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:12, 15 February 2015 AndrewBCN (Talk   contribs) . . (3,233 bytes) (-1) . . (Undo revision 144748 by Elastostar (talk))   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:12, 15 February 2015 AndrewBCN (Talk   contribs) . . (3,234 bytes) (-21) . . (Undo revision 144749 by Elastostar (talk))  |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:12, 15 February 2015 AndrewBCN (Talk   contribs) . . (3,255 bytes) (-1) . . (Undo revision 144750 by Elastostar (talk))   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:12, 15 February 2015 AndrewBCN (Talk   contribs) . . (3,256 bytes) (-178) . . (Undo revision 144751 by Elastostar (talk))   |
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| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 08:12, 16 January 2015 Traunflug (Talk   contribs) m . . (4,021 bytes) (-11) . . (Formatting.)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 08:01, 16 January 2015 Traunflug (Talk   contribs) . . (4,032 bytes) (-53) . . (Removed this useless help icon and aligned padding.)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 07:57, 16 January 2015 Traunflug (Talk   contribs) . . (4,085 bytes) (-243) . . (Removed these blog links. Core Team Blog is apparently abandoned and aggregator is available in the left column.) |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 07:54, 16 January 2015 Traunflug (Talk   contribs) . . (4,328 bytes) (+54) . . (Changed the newfeed to our own wiki. Works beautifully :))   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:57, 12 December 2014 Traunflug (Talk   contribs) . . (4,274 bytes) (-194) . . (Moved header into a template.)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:50, 12 December 2014 Traunflug (Talk   contribs) m . . (4,468 bytes) (0) . . (Better spacing.)  |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 05:45, 12 December 2014 Traunflug (Talk   contribs) m . . (4,468 bytes) (0) . . (Removed protection from "RepRap". Get rid of the distracting "There are security restrictions on this page".)     |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 06:19, 28 September 2014 Thejollygrimreaper (Talk   contribs) . . (4,468 bytes) (+209)   |
| <input type="checkbox"/> (cur   prev) | <input type="radio"/> 09:53, 14 July 2014 Traunflug (Talk   contribs) . . (4,259 bytes) (-17) . . (Fix link.)  |

<http://reprap.org/metadata/index.php?title=RepRapWiki:History>

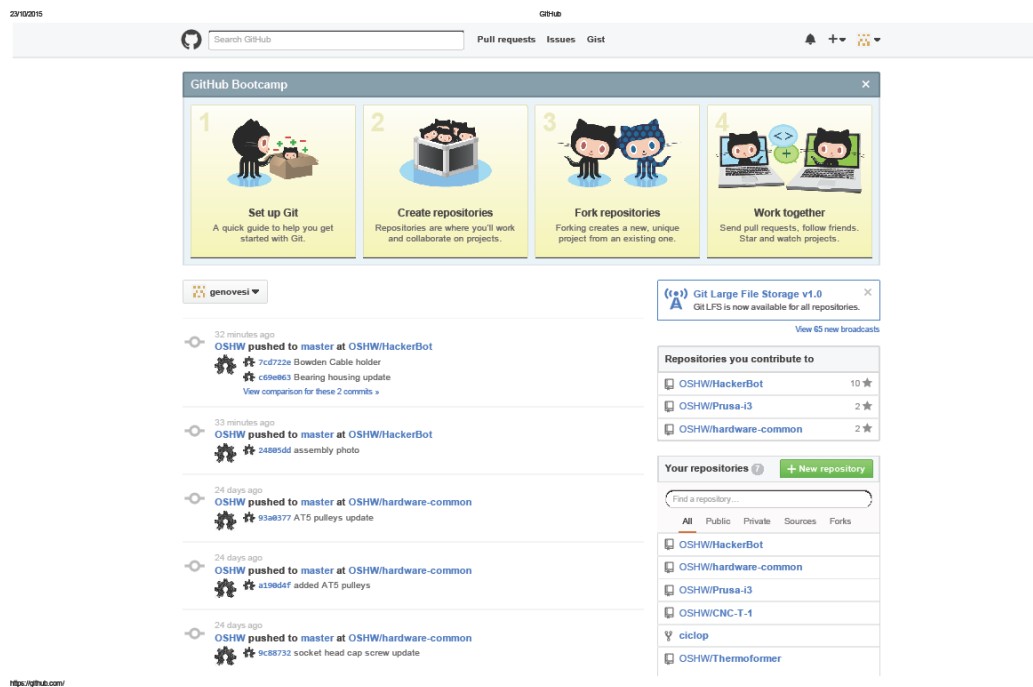




# GitHub

## Cos'è GIT HUB...

- Sistema di revisione
- Possibilità di accesso pubblico o privato
- È possibile clonare un progetto
- Collaborare
- E dopo che il proprietario del progetto ha valutato la modifica inserirla nel progetto principale
- Oppure il clone potrebbe diventare la vostra versione del progetto



# Software

- Disegno CAD: openscad, freecad, etc.
- Disegno elettronico: EAGLE, KiCad
- Gestione progetti: GIT, WIKI

Lista di alcuni software utilizzati: <http://reprap.org/wiki/Software>





# Licenze

Ad ogni progetto va associata una licenza d'uso e per definire un progetto open-hardware la licenza deve prevedere la possibilità di:

- Costruire
- Distribuire
- Modificare
- Vendere
- <http://freedomdefined.org/OSHW>



# GRAZIE



OPENSOURCE  
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