

Benefits of Open Source and Open Design

8 December 2015

Technical University of Crete
Chania



Πολυτεχνείο
Κρήτης

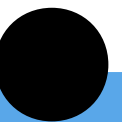
Jann Eike Kruse



- **What is Open Source Free Software?
(And what not...)**

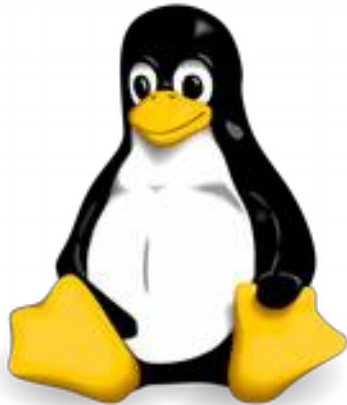
Software Freedom, Creative Commons,
Open Source Hardware, Open Design

- **Why is it so successful?**
- **Which disciplines can benefit from Free/Open?**
- **How ~~could~~ *will* it become reality?**
- **What can we do today?**



Some of the major

Icons of Freedom – Seen them?



Free / Libre / Open-Source



What is *Open-Source* *Free Software*?



The GNU of the
FSF

FSF's *4 Freedoms*: (Free Software Foundation)

- Use it
for any purpose
- Study
how it works
- Adapt
to your own needs
- Share
with friends and others

Open-Source Free Software? Free from restrictions!



FSF's 4 Freedoms: (Free Software Foundation)

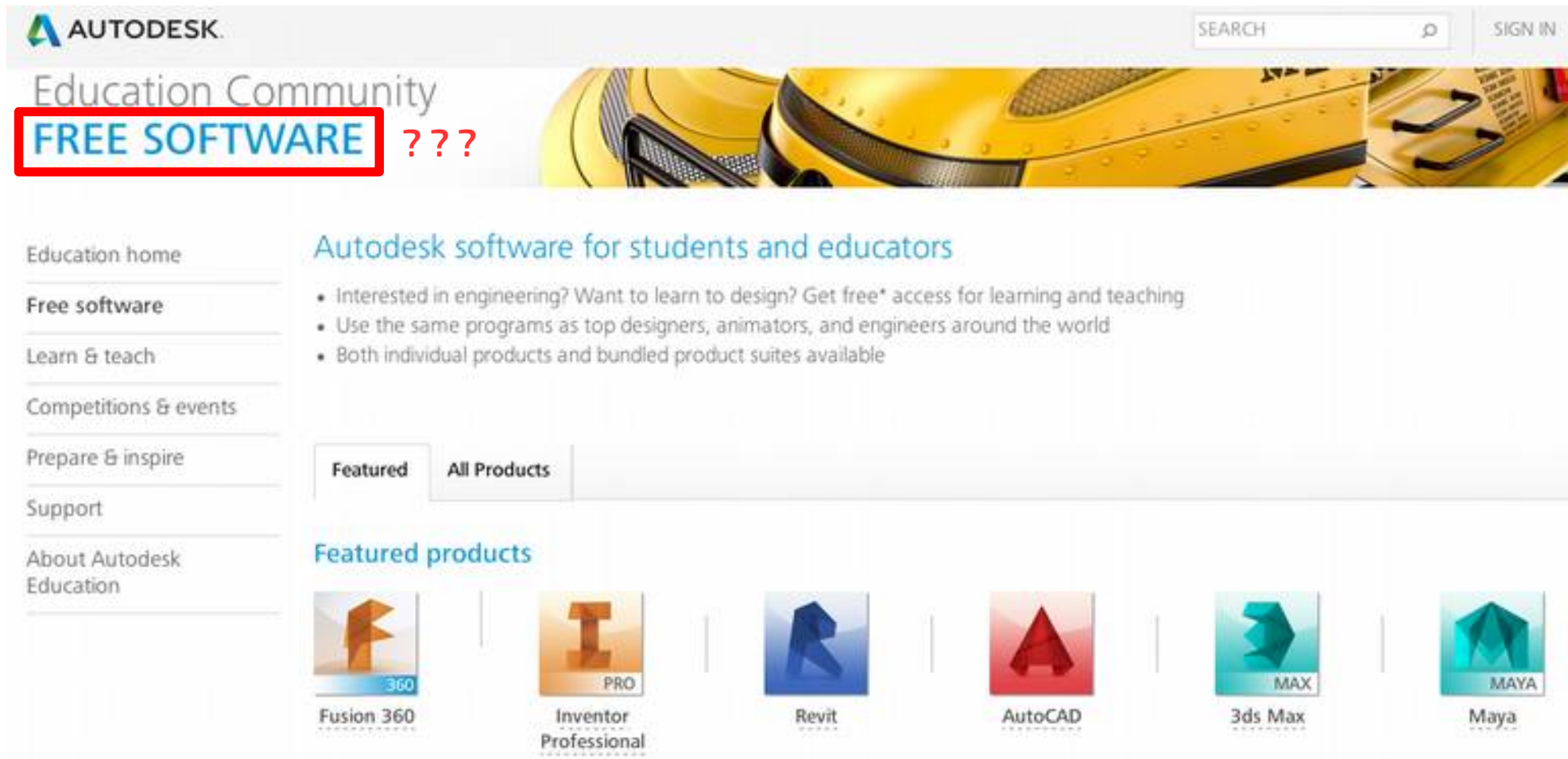
- It's not always
“free of cost”



- It's about
“freedom from
restrictions”

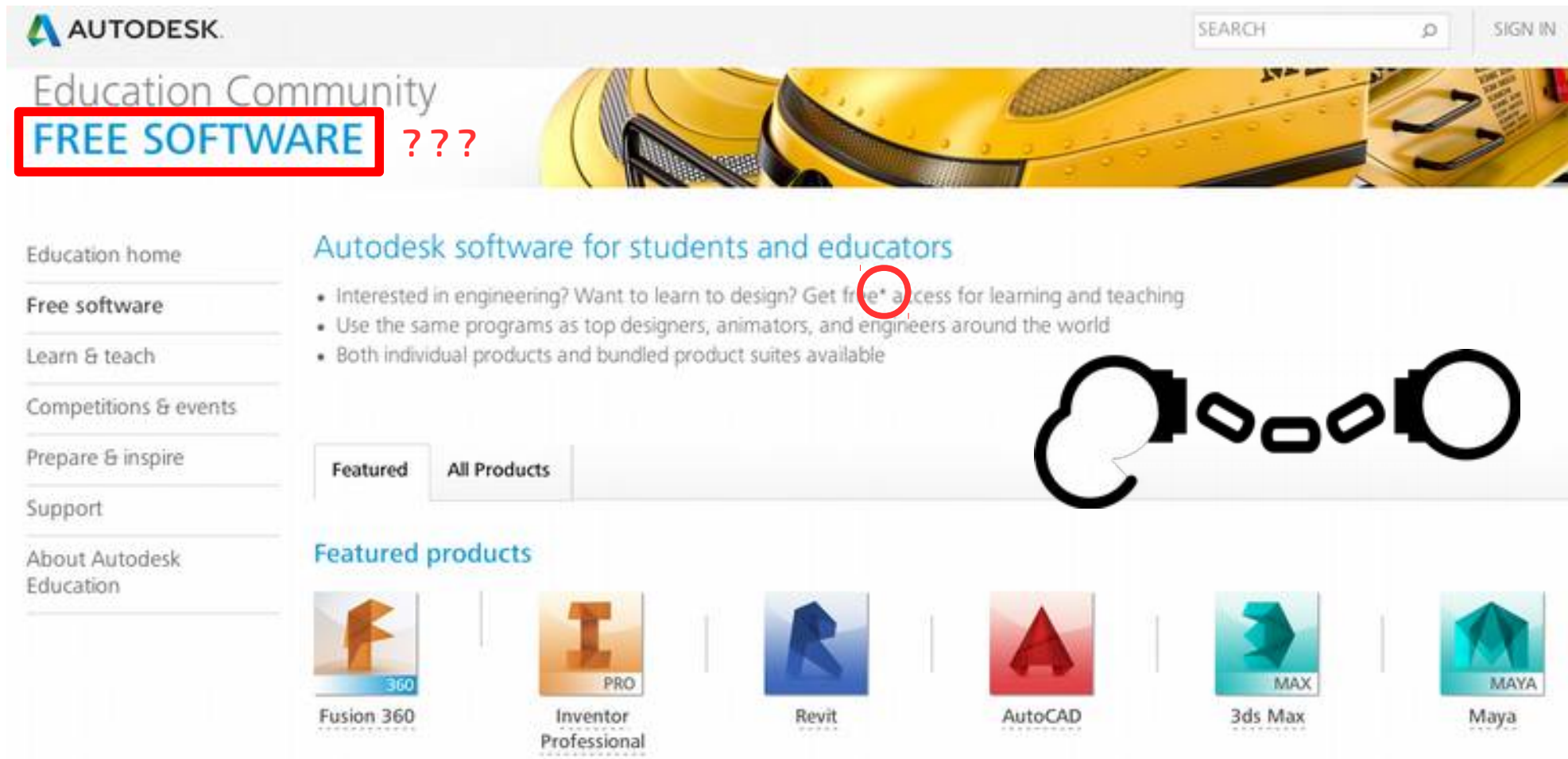


What is *Open-Source* Free Software?



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What is *Open-Source* Free Software?



The screenshot shows the Autodesk Education Community website. At the top, the Autodesk logo is on the left, and a search bar and 'SIGN IN' link are on the right. Below the logo, the text 'Education Community' is displayed, followed by 'FREE SOFTWARE' in a blue box with a red border. To the right of this box are three red question marks '???'.

On the left side, there is a navigation menu with the following items: 'Education home', 'Free software', 'Learn & teach', 'Competitions & events', 'Prepare & inspire', 'Support', and 'About Autodesk Education'.

The main content area features the heading 'Autodesk software for students and educators'. Below this heading is a list of bullet points: 'Interested in engineering? Want to learn to design? Get free* access for learning and teaching', 'Use the same programs as top designers, animators, and engineers around the world', and 'Both individual products and bundled product suites available'. The word 'free*' in the first bullet point is circled in red.

To the right of the bullet points is a large black icon of a cloud connected to a server rack.

Below the bullet points, there are two tabs: 'Featured' and 'All Products'. Under the 'Featured' tab, there is a section titled 'Featured products' which displays six software products in a row: Fusion 360, Inventor Professional, Revit, AutoCAD, 3ds Max, and Maya. Each product is represented by a small icon and its name.

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What is *Free Software*?

Free from restrictions!



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Professional



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What is *Free* Software?

Free from restrictions!

4 Freedoms:

- Use it for any purpose

AUTODESK

Education Community

~~NON-FREE~~ SOFTWARE

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Professional



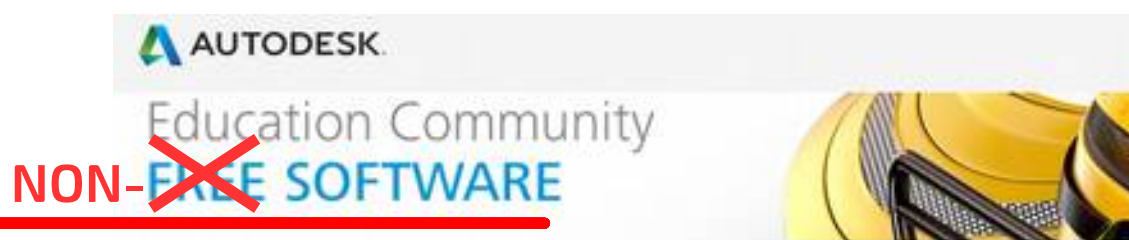
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What is *Free Software*?

Free from restrictions!

4 Freedoms:

- Use it for any purpose
- Study how it works
(read the source code)



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Professional



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Open-Source Free Software? Free from restrictions!



You must be allowed to

- Use for anything you want
- Copy freely
- Study how the program works
- Change the internals

FSF's 4 Freedoms: (Free Software Foundation)

- It's not always
“free of cost”



- It's about
“freedom from
restrictions”

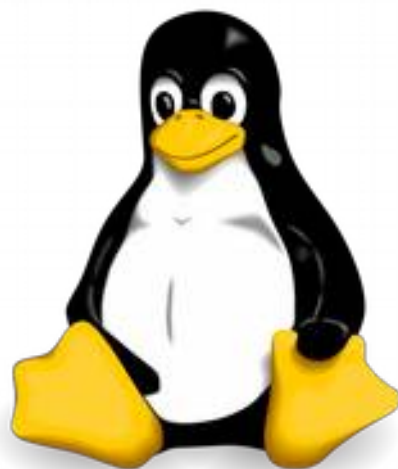
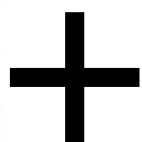


Examples – Software

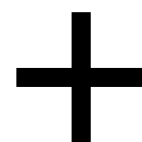
Debian GNU/Linux and GNOME



GNU tools



Linux kernel



**GNOME™
desktop**

Examples – Software GNU/Linux and GNOME 3

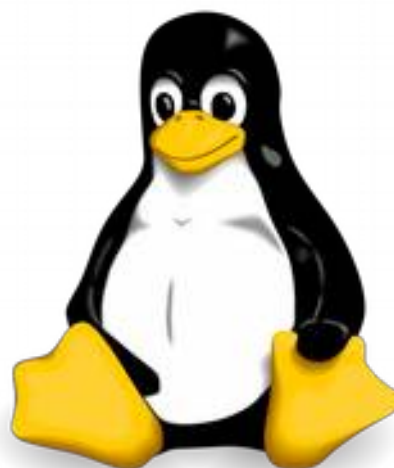


Examples – Software

Ubuntu GNU/Linux and Unity



+



+



Examples – Software GNU/Linux and Unity



Examples – Software

Web browser & Email



Thunderbird
Email client



Firefox
Web browser



Chromium
Web browser

Examples – Software Graphics and Design



Blender

3D design
and
3D animation



Inkscape

Vector graphics
designer
and editor



GIMP

Photo
and
Image editor

Examples – Software

GIMP

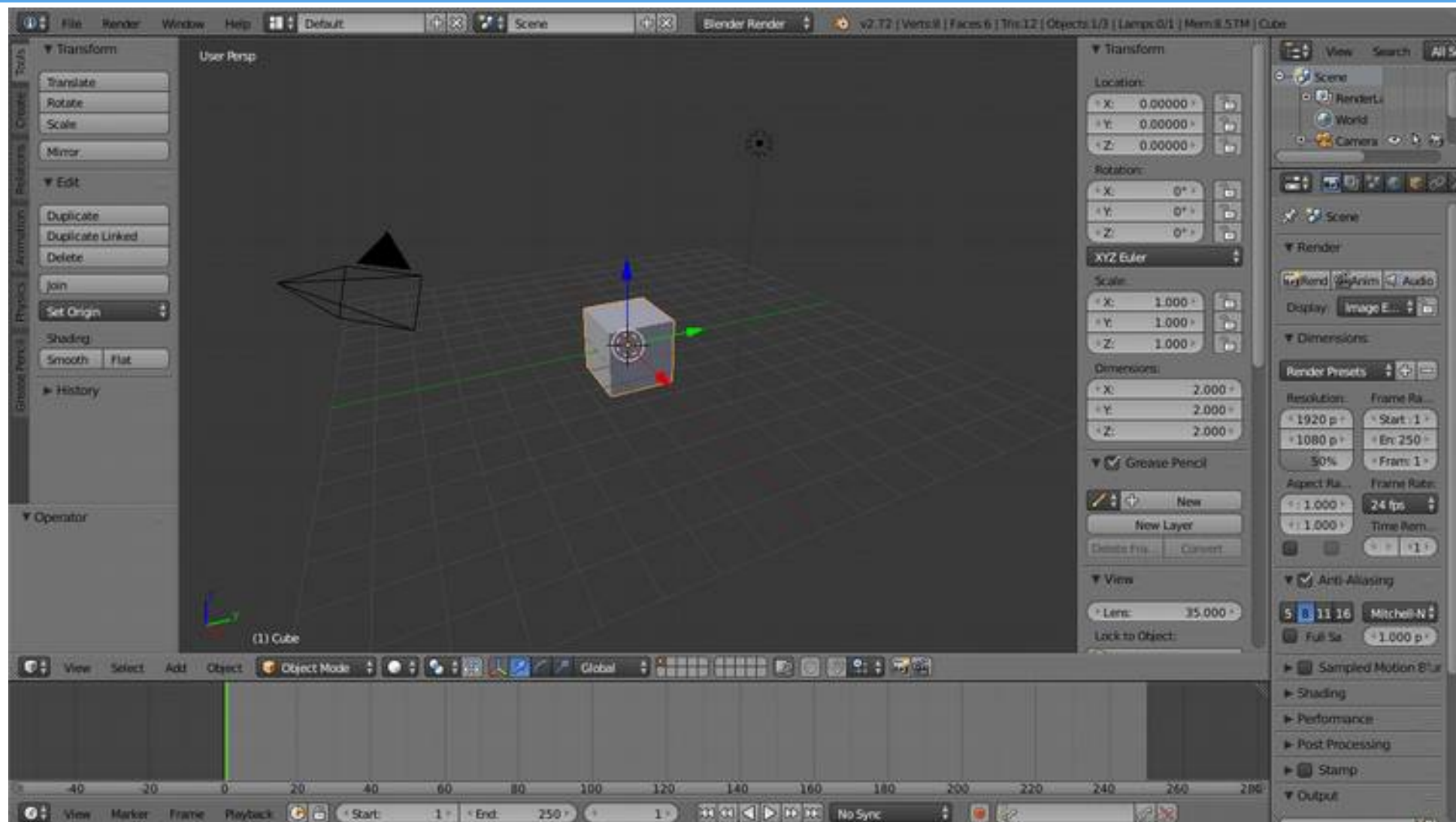


Examples – Software Inkscape



Examples – Software Blender



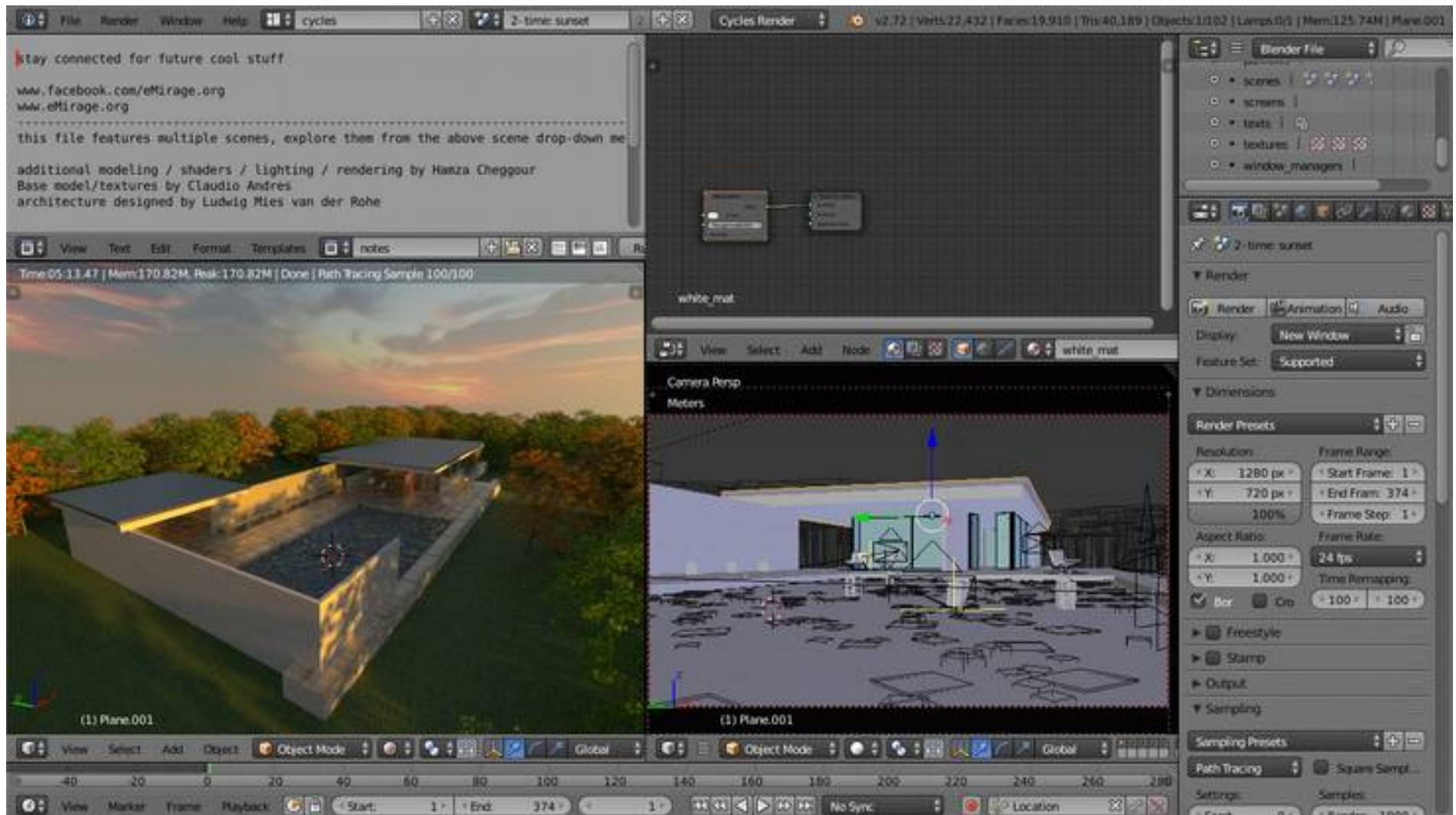


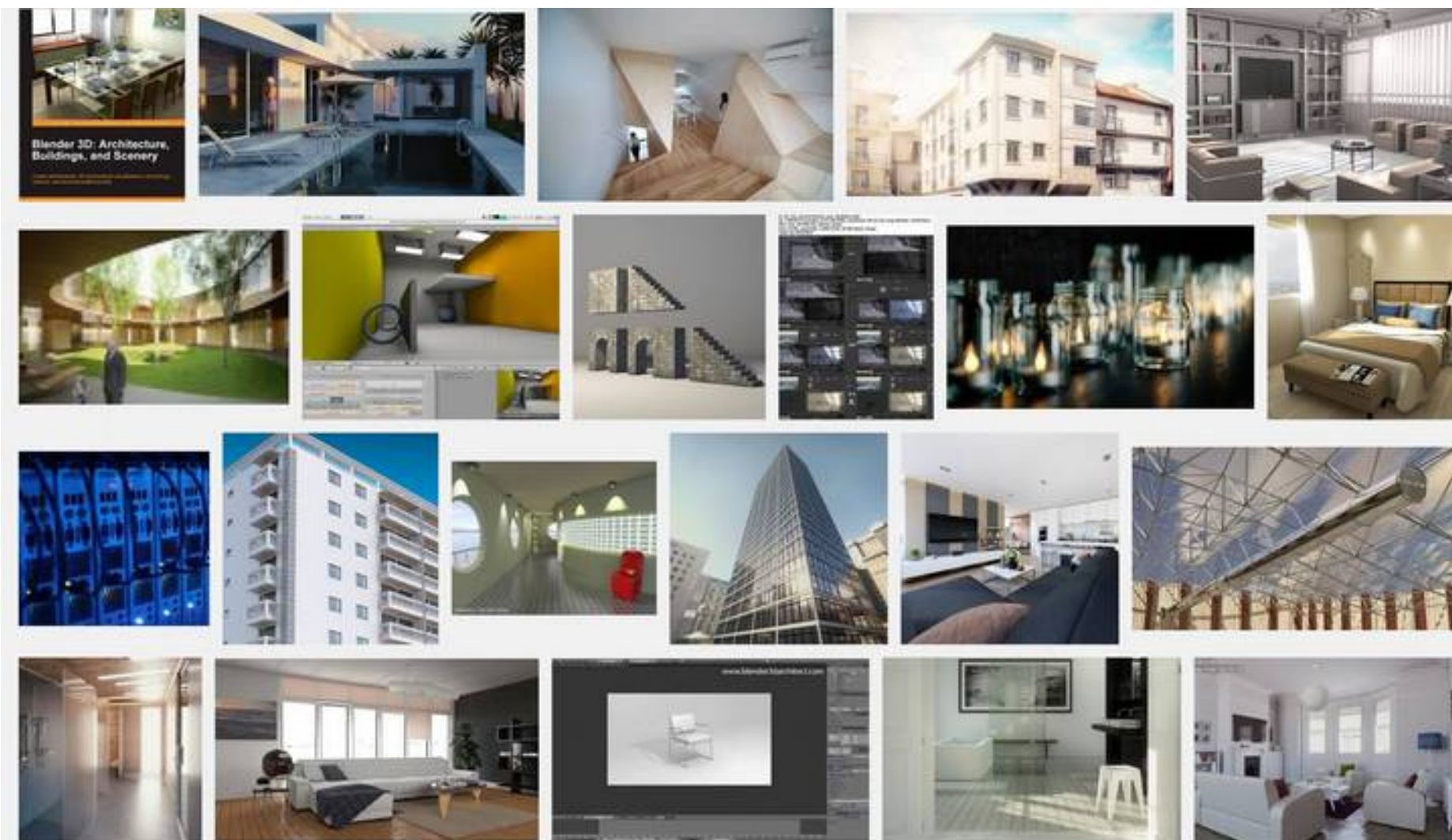










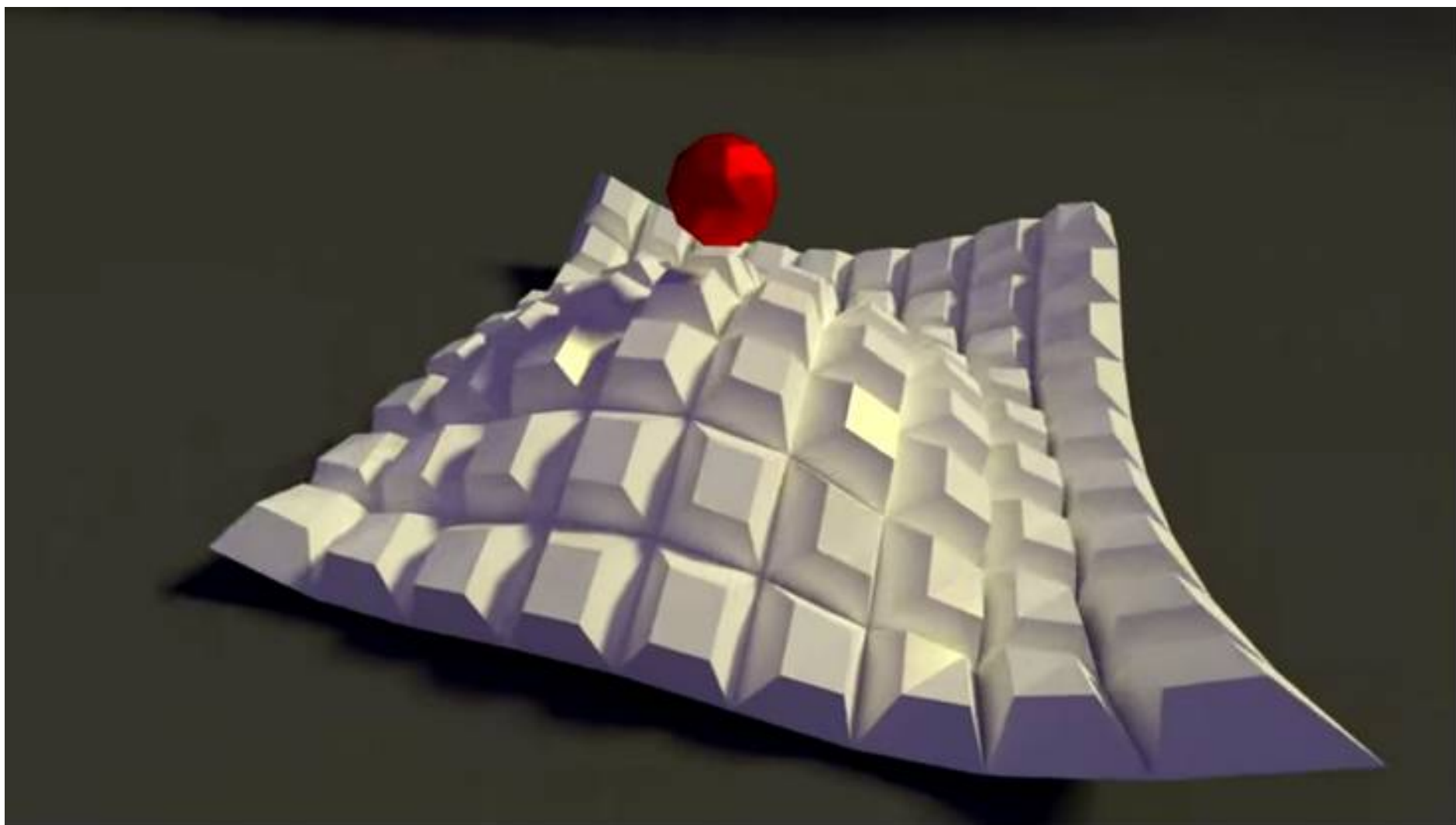


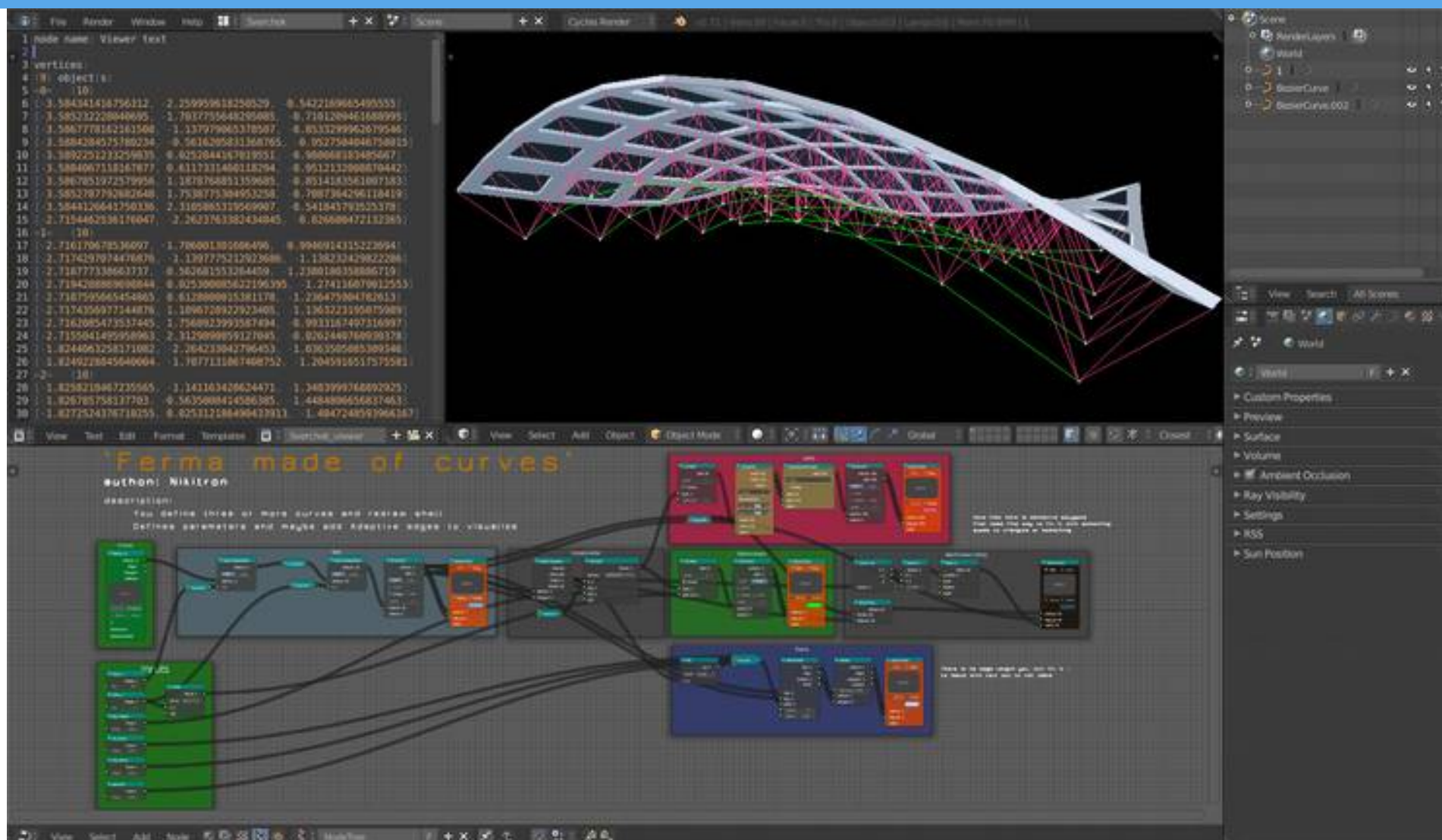


commons lab



blender™







commons lab



blender™



What is Free Open-Source Software?



The GNU
(Affero) General Public Licence

FSF's 4 *Freedom*s:
(Free Software Foundation)

- Use
- Study
- Adapt
- Share

for SOFTWARE

What about the arts?

Music, Theatre, Photography, ...



What about the arts?

Music, Theatre, Photography, ...



Freedom to:

- **Use** (play, perform...)
- **Share** (copy, upload...)
- **Adapt** (remix, change...)

Creative Commons

- Based on copyright law

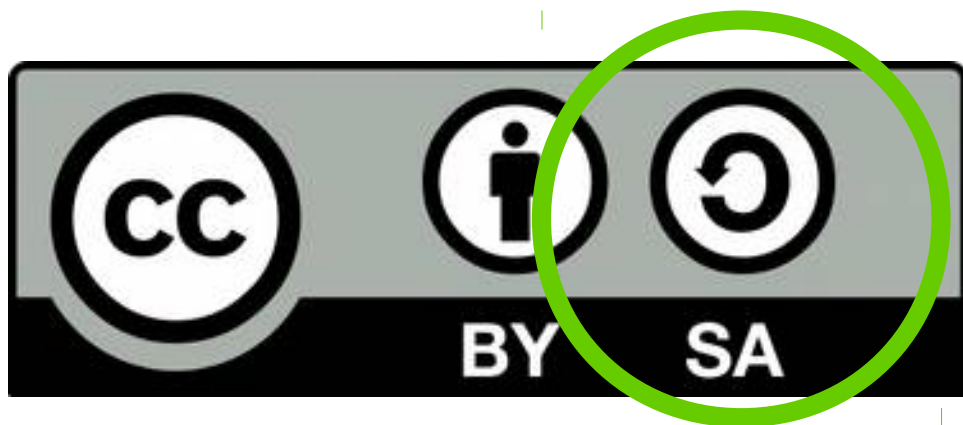
As long as you:

- **Attribute**
 - Say who made the original!

What about the arts?

Music, Theatre, Photography, ...

virtuous circle



Freedom to:

- Use (play, perform...)
- Share (copy, upload...)
- Adapt (remix, change...)

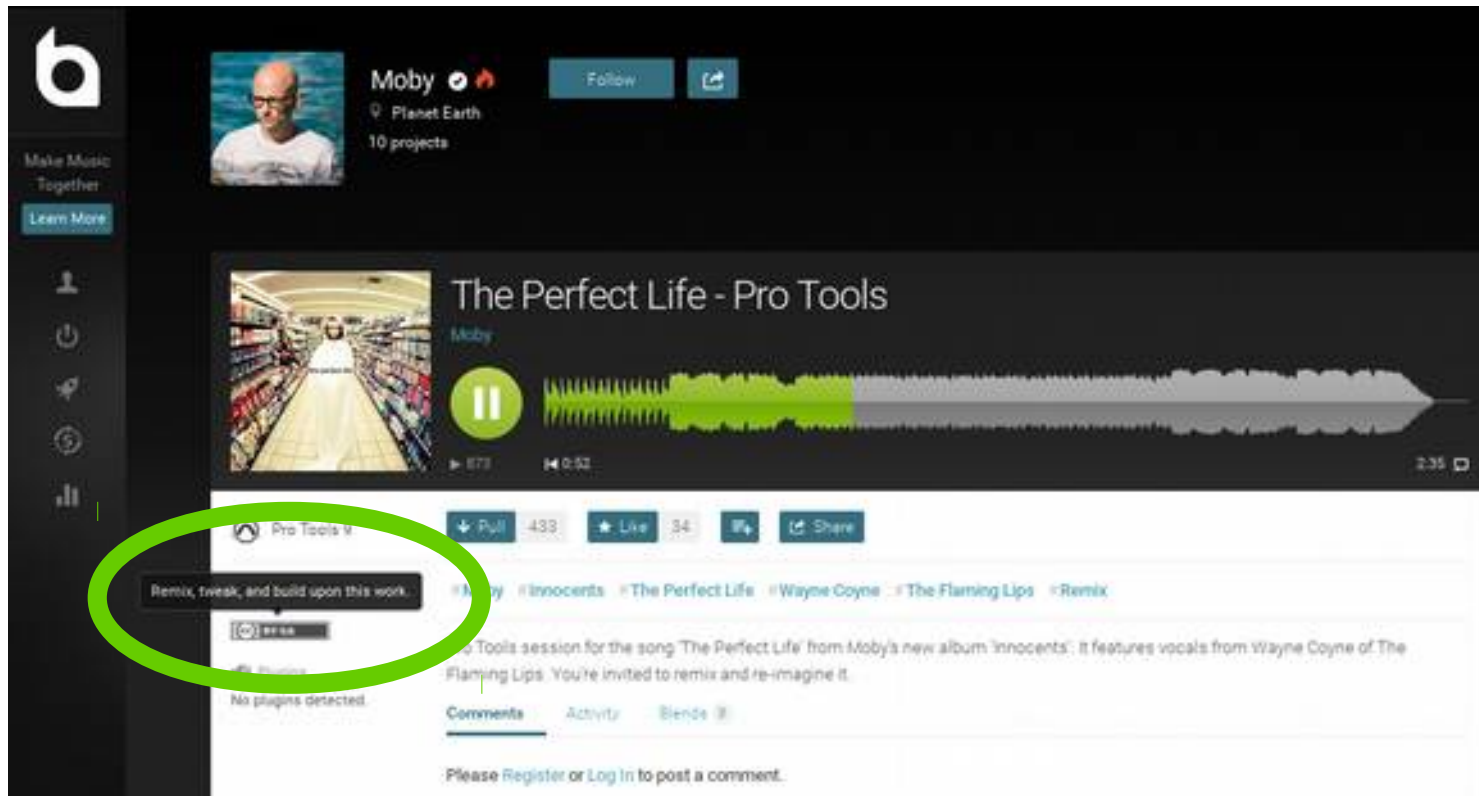
Creative Commons

- Based on copyright law
- We call it "CopyLEFT"

As long as you:

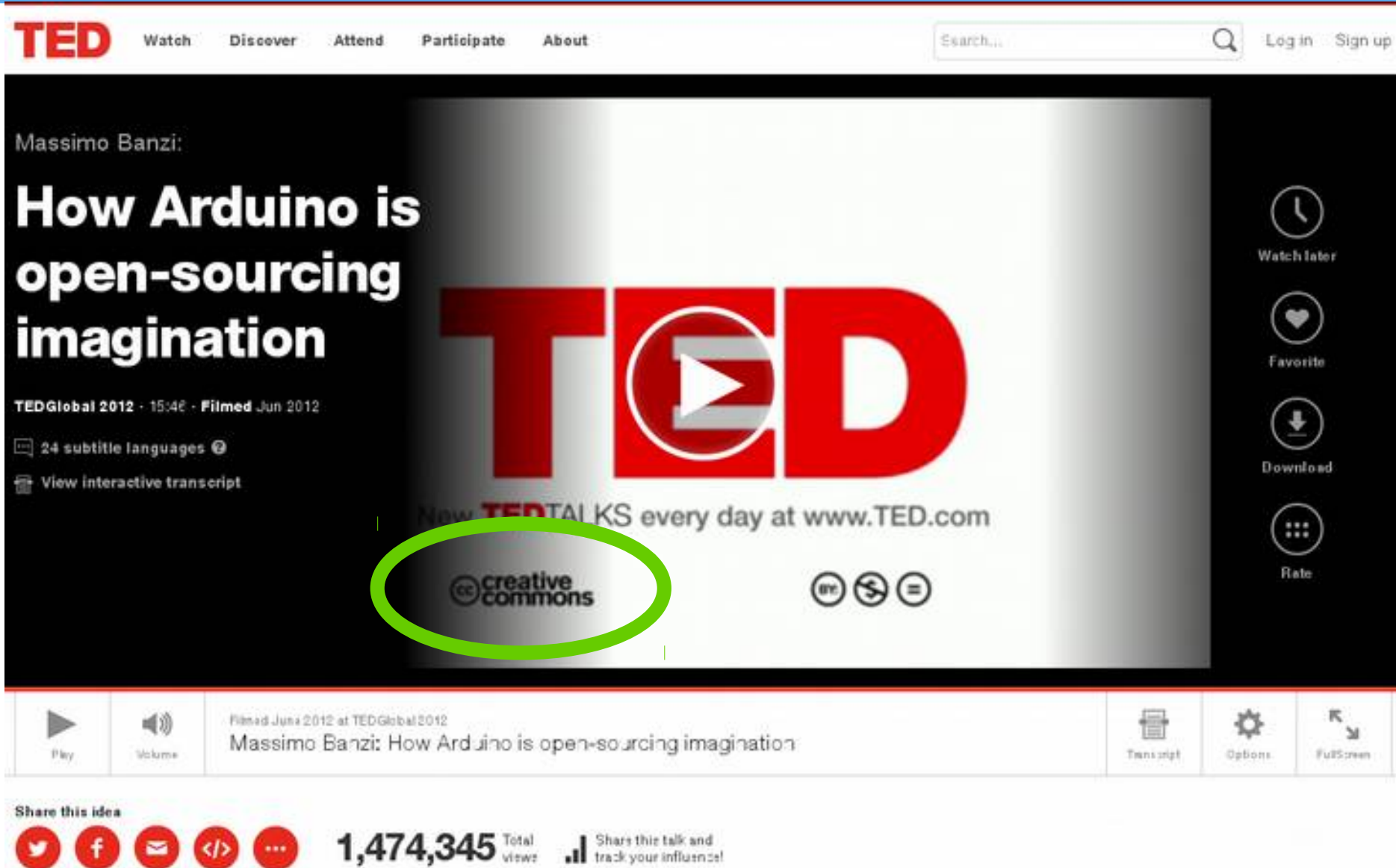
- Attribute
 - Say who made the original!
- Share alike
 - new versions are again Creative Commons

Who uses Creative Commons?



"In the digital present we live in, you can't control things, can't lock them down. The best way to make a living as musician, I find, is to set this stuff free and let the love come back to you."

Who uses Creative Commons?



Massimo Banzi:

How Arduino is open-sourcing imagination

TEDGlobal 2012 · 15:46 · Filmed Jun 2012

24 subtitle languages

View interactive transcript

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Volume

Filmed June 2012 at TEDGlobal 2012

Massimo Banzi: How Arduino is open-sourcing imagination

Transcript


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File:Cypripedium calceolus - Kaunis kuldking Keila.jpg

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Size of this preview: 800 × 533 pixels. Other resolutions: 320 × 213 pixels | 640 × 427 pixels | 1,024 × 683 pixels | 1,280 × 855 pixels | 4,500 × 3,000 pixels. Original file (4,500 × 3,000 pixels, file size: 6.56 MB, MIME type: image/jpeg); ZoomViewer: flashy/no flash.

Open in Media Viewer

Summary [\[edit \]](#)

Description	Eesti: Kaunis kuldking (<i>Cypripedium calceolus</i>), loomats Keilas. Lük kuuAub looduskaitses all olevate liide 3 kategooriasse. English: Lady's-slipper orchid (<i>Cypripedium calceolus</i>), alvar forest in Keila, Northwestern Estonia. It's rare and protected species in Estonia.
Date	31 May 2014, 18:56:28
Source	Own work
Author	Ivar Leikus

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File: [Cyripedium calceolus - Kaunis kuldking Keila.jpg](#)

from Wikimedia Commons, the free media repository

File | File history | File usage on Commons | File usage on other wikis | Metadata

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Createve Commons Arts: Movies, Books and more



Sintel (2010)
14 min | Animation, Short, Fantasy | 27 September 2010 (Netherlands)

Your rating: ★★★★★★★★★★ 7.6
Ratings: 7.6/10 from 2,747 users
Reviews: 12 user | 1 critic

The film follows a girl named Sintel who is searching for a baby dragon.
Scale: full size
Direct: ...
Write: ...
Stars: ...



Blindsight (Firefall #1)
by Peter Watts (Goodreads Author)

★★★★★ 3.96 rating details · 12,417 ratings · 1,216 reviews

It's been two months since the screaming as they burned the space probe hears whispers not to us. Who to send to Send a linguist with mul

Hardcover, 384 pages
Published October 3rd 2005
more details...

Want to Read

Rate this book
★★★★★

Read Book

Friend Reviews

Recommend it |

Readers Also Enjoy

rating details



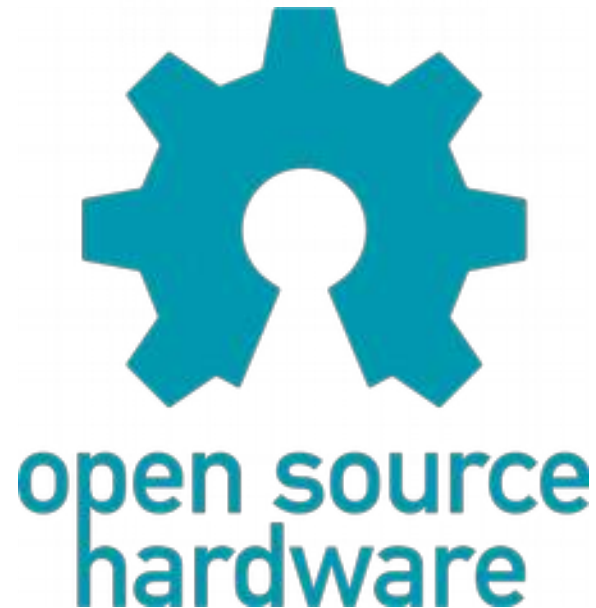
91% of people liked it

3.96 average rating, 12417 ratings, 1216 reviews, added by 25400 people, 10426 All editions: to-reads

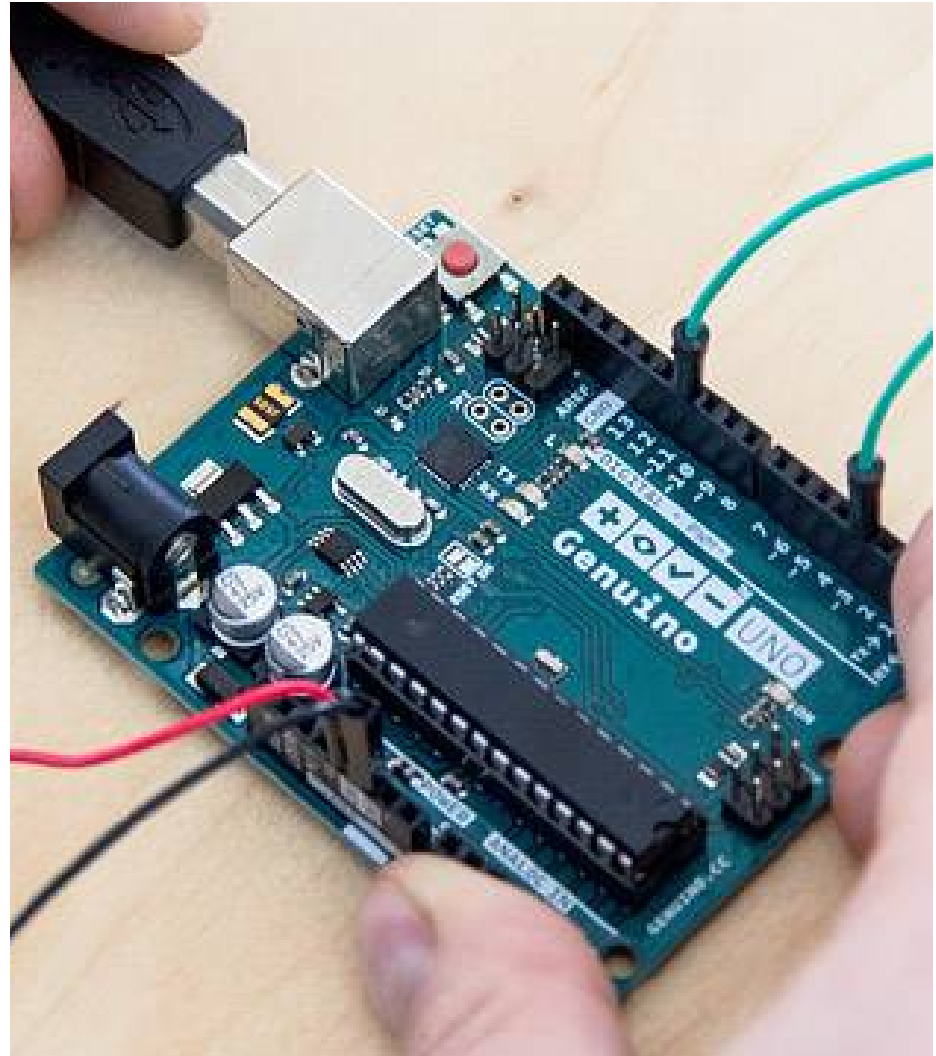
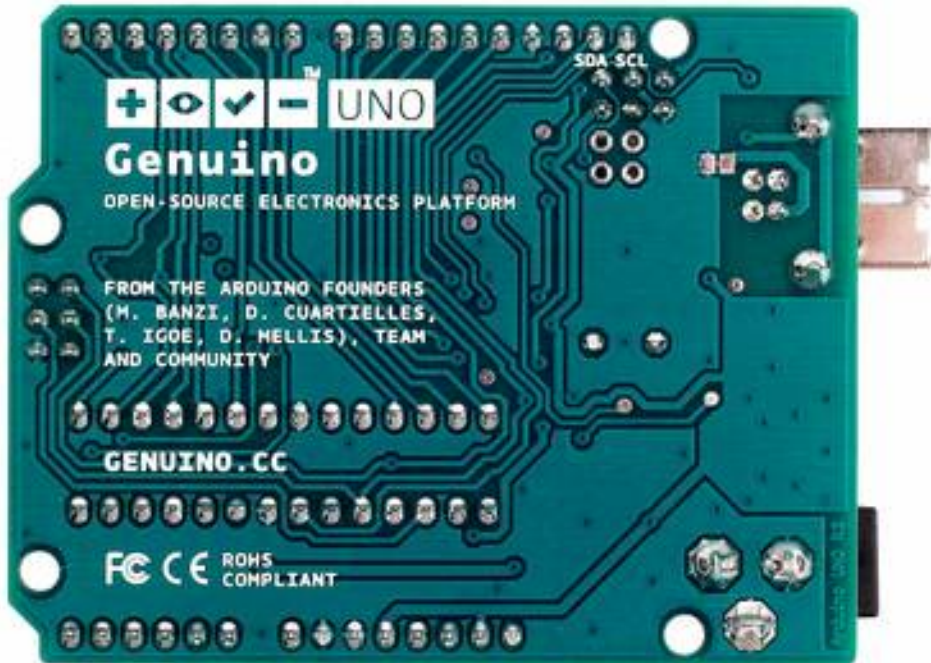
This edition: 3.97 average rating, 10651 ratings, 989 reviews, added by 22376 people

Web site image:
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Open Source Hardware?



Open-Source Hardware?



Blink | Arduino

File Edit Sketch Tools Help

Blink

```

/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
  */

// Pin 13 has an LED connected on most Arduino boards.
// give it a name:
int led = 13;

// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}

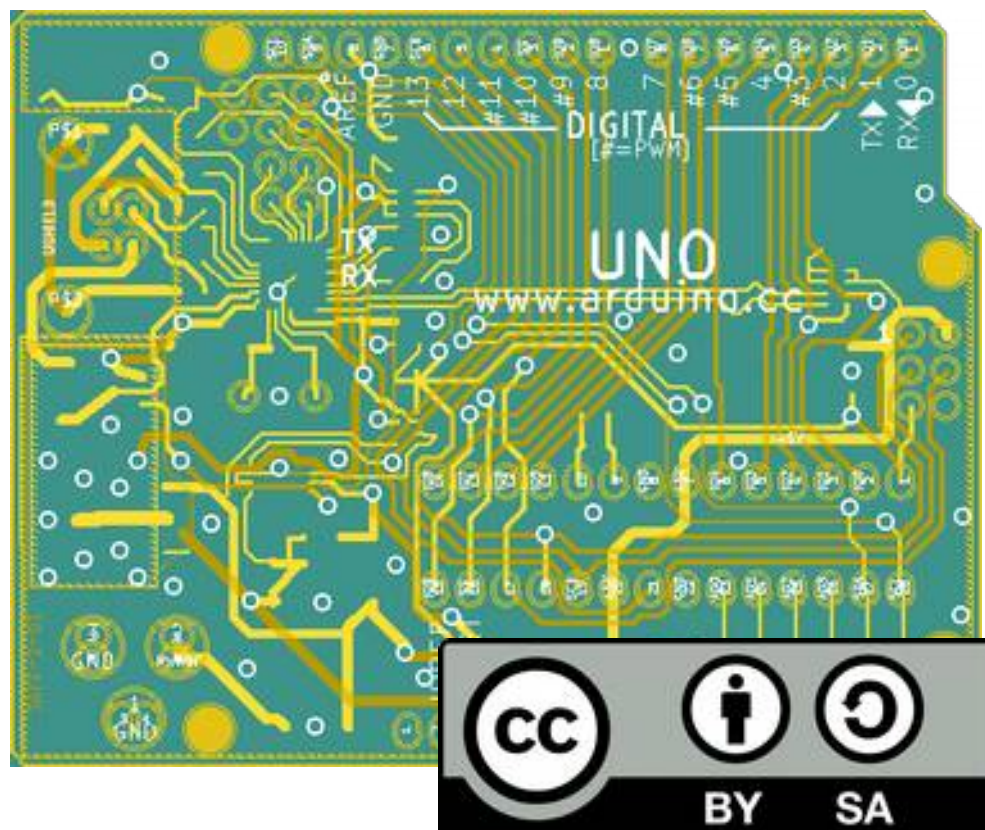
// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);             // wait for a second
  digitalWrite(led, LOW);  // turn the LED off by making the voltage LOW
  delay(1000);             // wait for a second
}

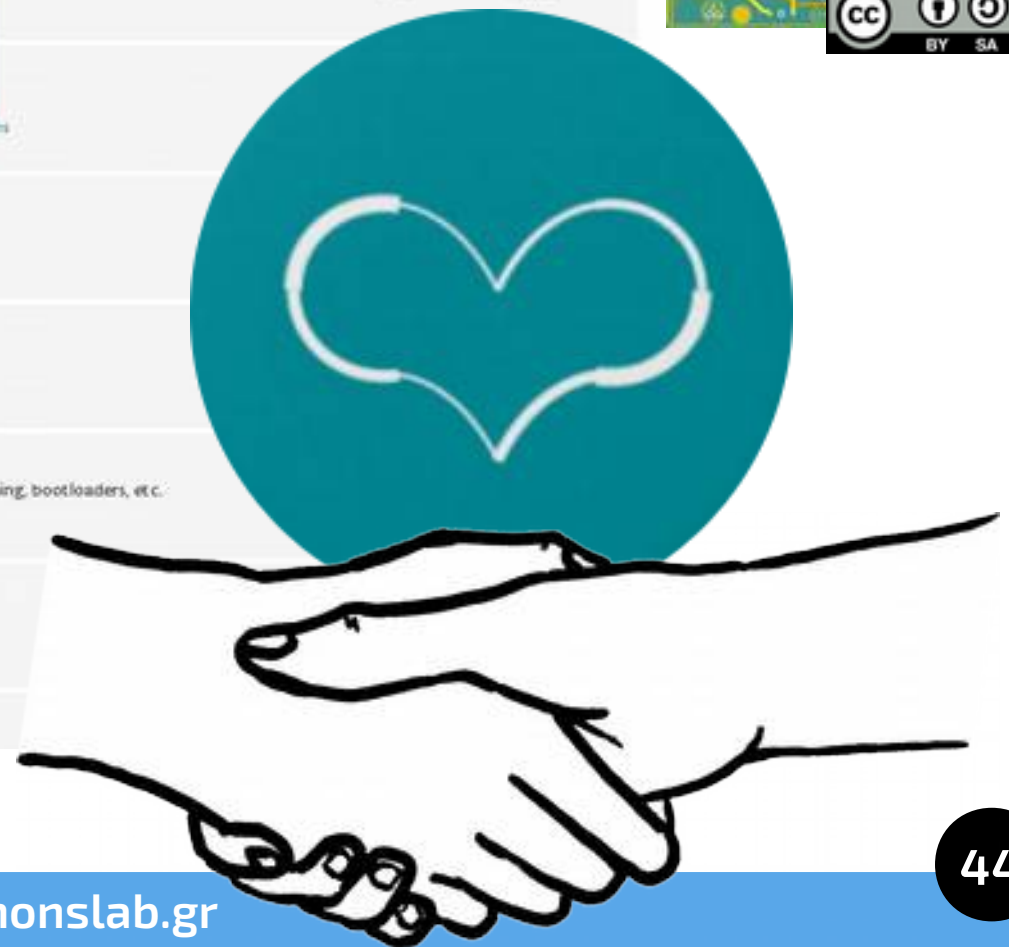
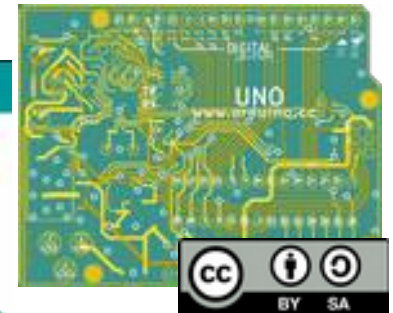
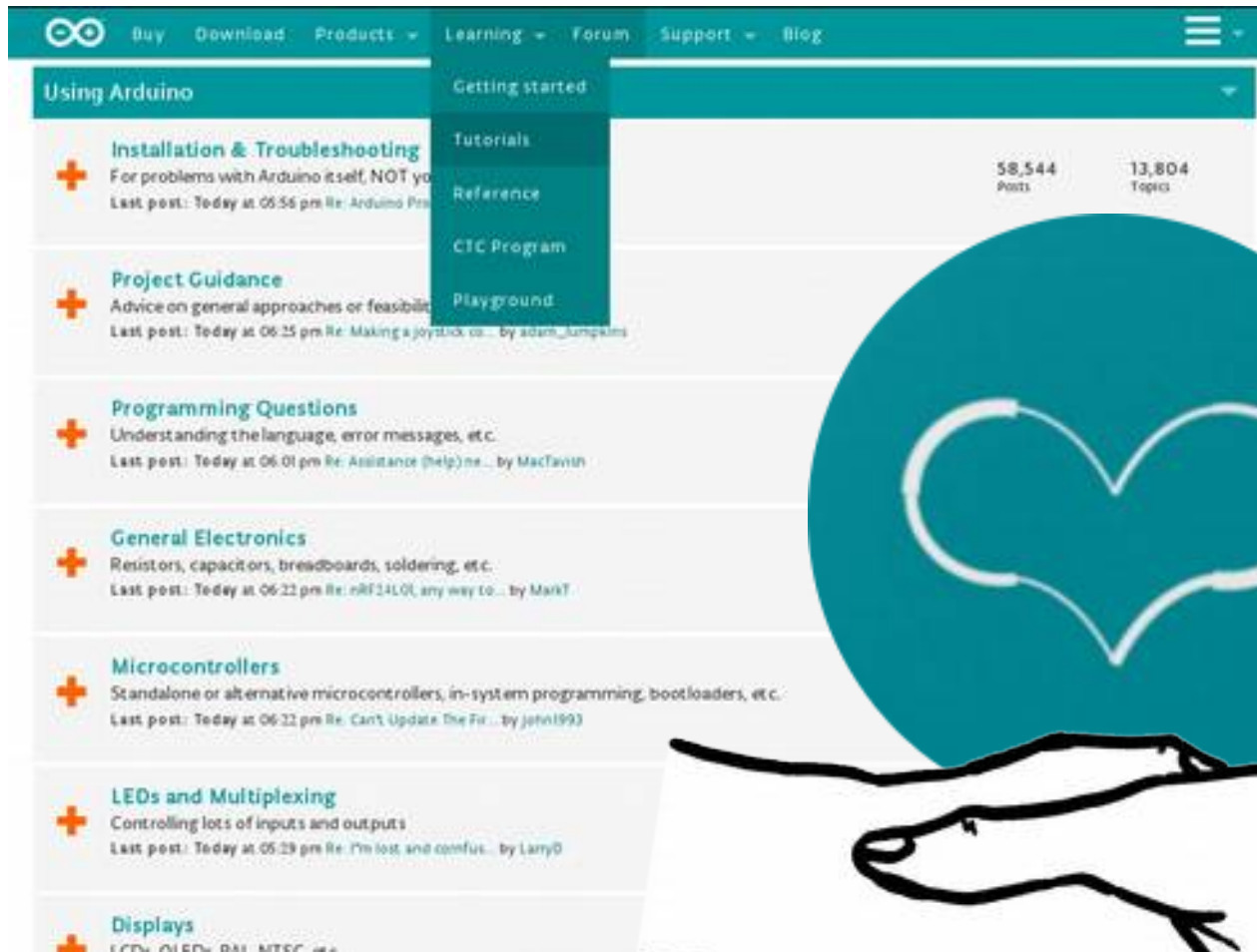
```

Done compiling.

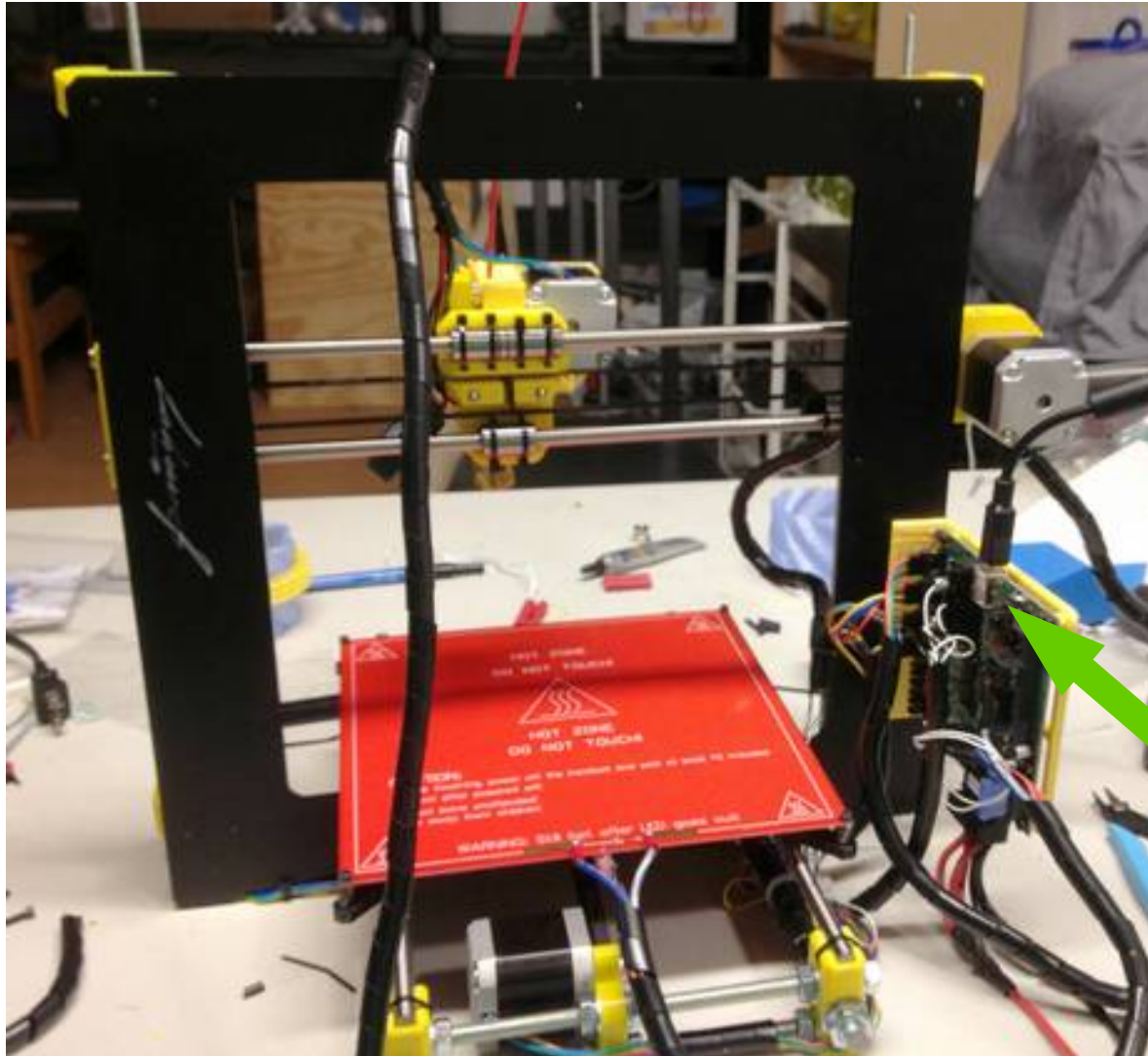
Binary sketch size: 1,056 bytes (of a 30,720 byte maximum)

1 Arduino Pro or Pro Mini (5V, 16 MHz) via USB





Based on ARDUINO



Based on ARDUINO



Based on

ARDUINO

Why is free/open so successful?

- Large companies try to 'dominate' the market
 - > copyright law, patent law, design right law
 - Result also in private culture of 'ownership' of ideas:
"That idea is mine! You can't use it."
- These are "monopoly rights"
 - Exclusion of the majority from production
 - Prohibition of adaption, change, further development
 - Often it's secret and impossible to learn from it.

Why is free/open so successful?

- Large companies try to 'dominate' the market
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SLOWS DOWN EVOLUTION

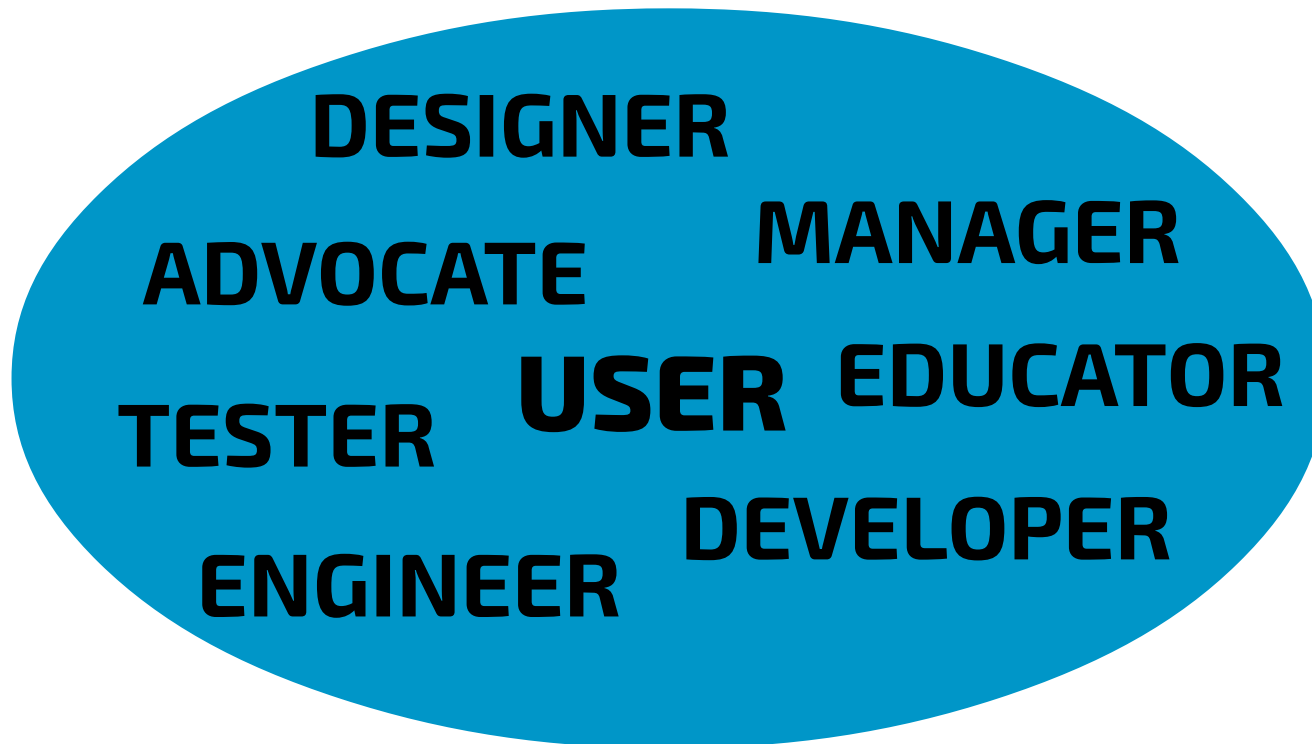
Why would anyone care?

Why is free/open so successful?

- Many people create value out of passion because they love what they do:
 - Musicians want their music to be played.
 - Painters want their paintings to be seen.
 - Software developers want their programs to be used.
 - Designers want their designs to become real.
- Creative Commons allows users to
 - Use, Share, Adapt, Develop, Improve, ...

Why is free/open so successful?

- Inclusion of many skills of many people
user = tester = educator = developer = designer = artist ...
- Many contributions make one big change



-> collaboration <-

My mother used to say:

“All kitchens are designed by men.
They should ask a woman to design them correctly!”

- User experience is vital.
 - Collaboration between users and designers

Why now?

- The Internet and the globalization has made massive collaboration possible.
 - Groups of thousands, even millions of people can collaborate effectively through on-line tools.
 - Wikipedia has over 1 million real users, which have made more than 10 edits each. And the 3.000 most active users make over 100 edits every month each.^[1]
 - That's more than 10.000 edits every day.

[1] <https://stats.wikimedia.org/EN/TablesWikipediaEN.htm>

Which disciplines can benefit from free/open collaboration?

- Software
- Arts
- Electronics
- Architecture
- Education
- Science

ESPECIALLY USEFUL IF...

- ... knowledge and experience are the main assets to produce quality.
and / or
- ... the user is more in touch with the product than the designer.

How ~~could~~ will Open Design become reality?

- **Free and Open-Source Collaboration needs:**
 - Access to the collective trove of ideas and designs
 - Eg. web portal for browsing and download/upload
 - Possibility to effectively collaborate on designs
 - This requires tools which are available to anyone.
(Eg. open-source free software)
 - Incentive for designers to get involved
 - A healthy community with a good “spirit”
 - Possibility to take easily, reasons to give back. (CC-By-SA)
 - No unnecessary restrictions, no ideology overload.

Can anyone make a living from it?

- **Yes!**

- If what you do is useful for many people, then it's very likely that someone is willing to pay you for it.
- There already exist many Free/Open-Source businesses, big and small.

- **Examples:**

- Sell your services:
If you made it, people will come to you for help!
- Sell the products:
You designed it, you produced it, it's your quality!

Can anyone make a living from it?

- How do you deal with competition if they can just copy you product?!
- Stay ahead of them!
 - Give better service.
 - Innovate faster.
 - Work better with the community.
- Collaborate with them!
 - Integrate them into your community in a way that both sides benefit.

- Why is Free/Open good for you?
 - Because it respects your freedoms:
 - More useful:
Use it in any way that you find necessary.
 - More educational:
Study it, so that you can become better.
 - More accessible:
You can get it from your friends. (*Legally!*)
 - More humane:
Allows you to give the improvements to your friends.
 - More fun and more rewarding:
You will see more people using and loving your creations.

- **Why is Free/Open good for your product?**
 - Because it speeds up development:
 - More users:
Many more people, who can give you feedback.
 - More advertisement:
If people can freely share, you get free advocacy.
 - More experimental:
The most amazing ideas come to surface.
 - More developers:
If just 1% of 1000 people get active, that's free help.

- **Why is Free/Open good for your society?**
 - Because it is good for you.
=> It is good for everyone.
 - Because it is good for your product.
=> Makes faster innovation.
 - Because it encourages helping.
=> Better relationship with each other.

Thank you!



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