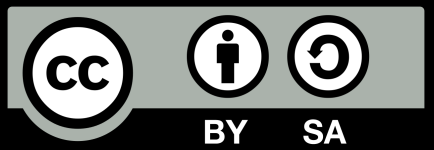
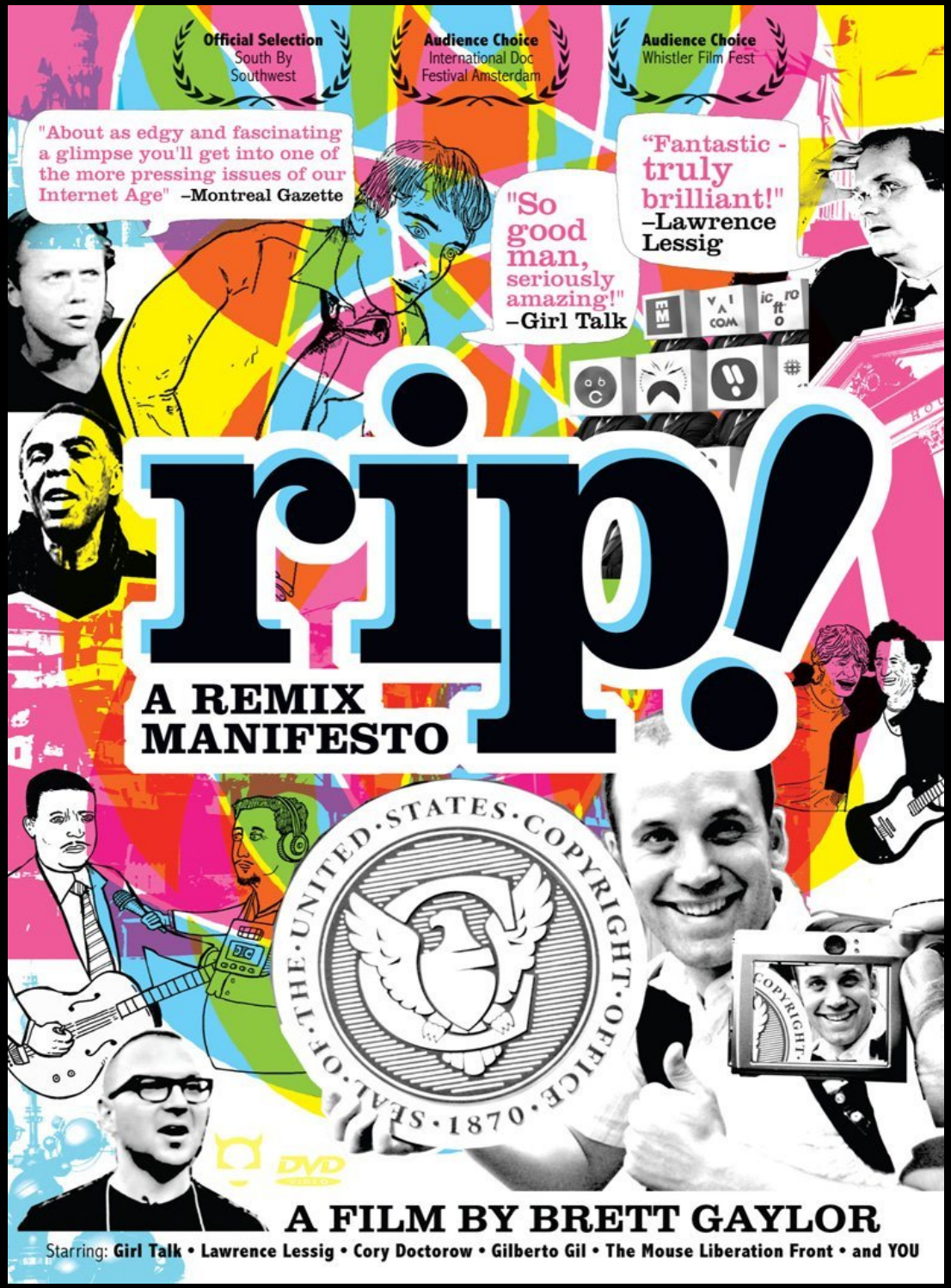
Construção de Impressora 3D

Laure Stelmastchuk

laure@usp.br





2009
RIP! A Remix Manifesto

MATERIAIS

ABS
(Acrilonitrila butadieno estireno)

PLA
(Poliácido lático)

N-VENT
(Copoliéster)

2015

Flexibilidade

Resistência ao UV

Pouco odor

Livre de estireno

FDA EFSA

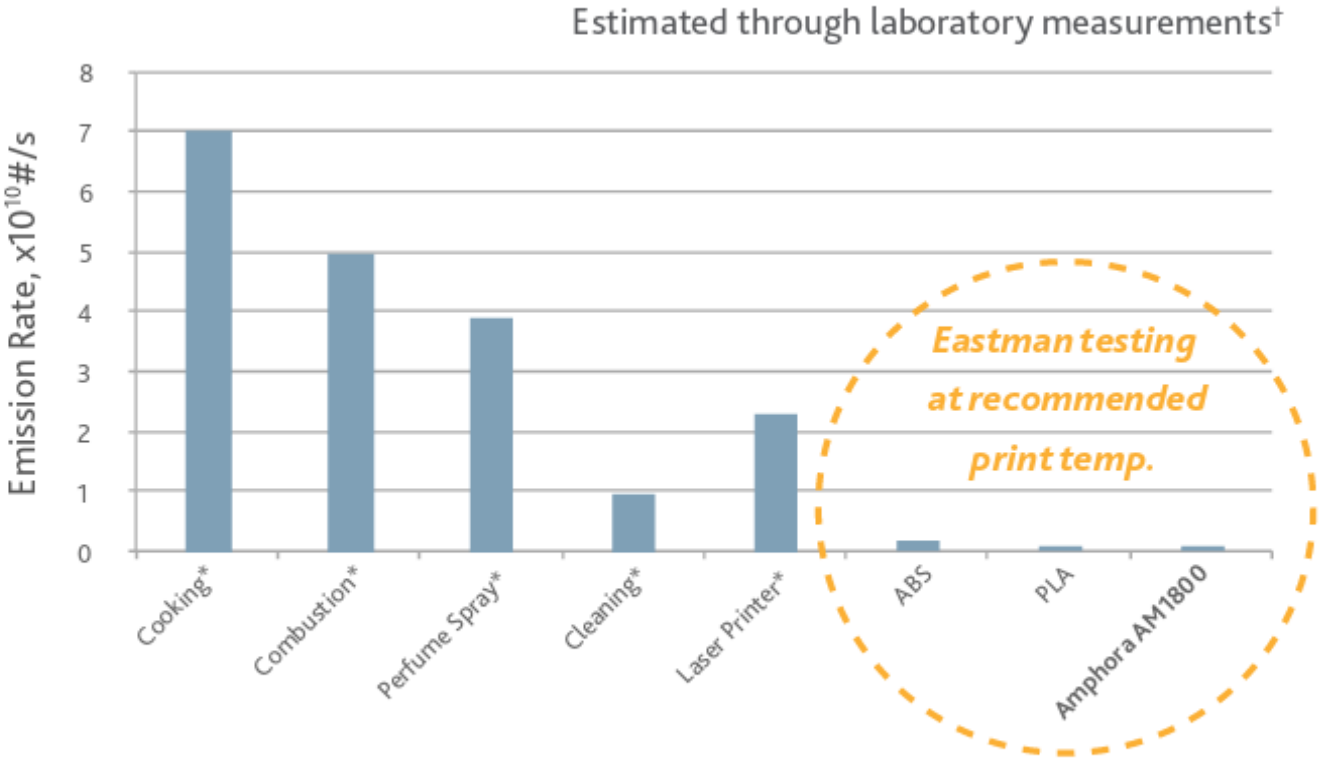
Eastman Amphora™ 3D Polymer AM1800

Eastman

Taulman 3D

Aleph Objects (Lulzbot)

Figure 2: Total nanoparticle emission rate source comparison*

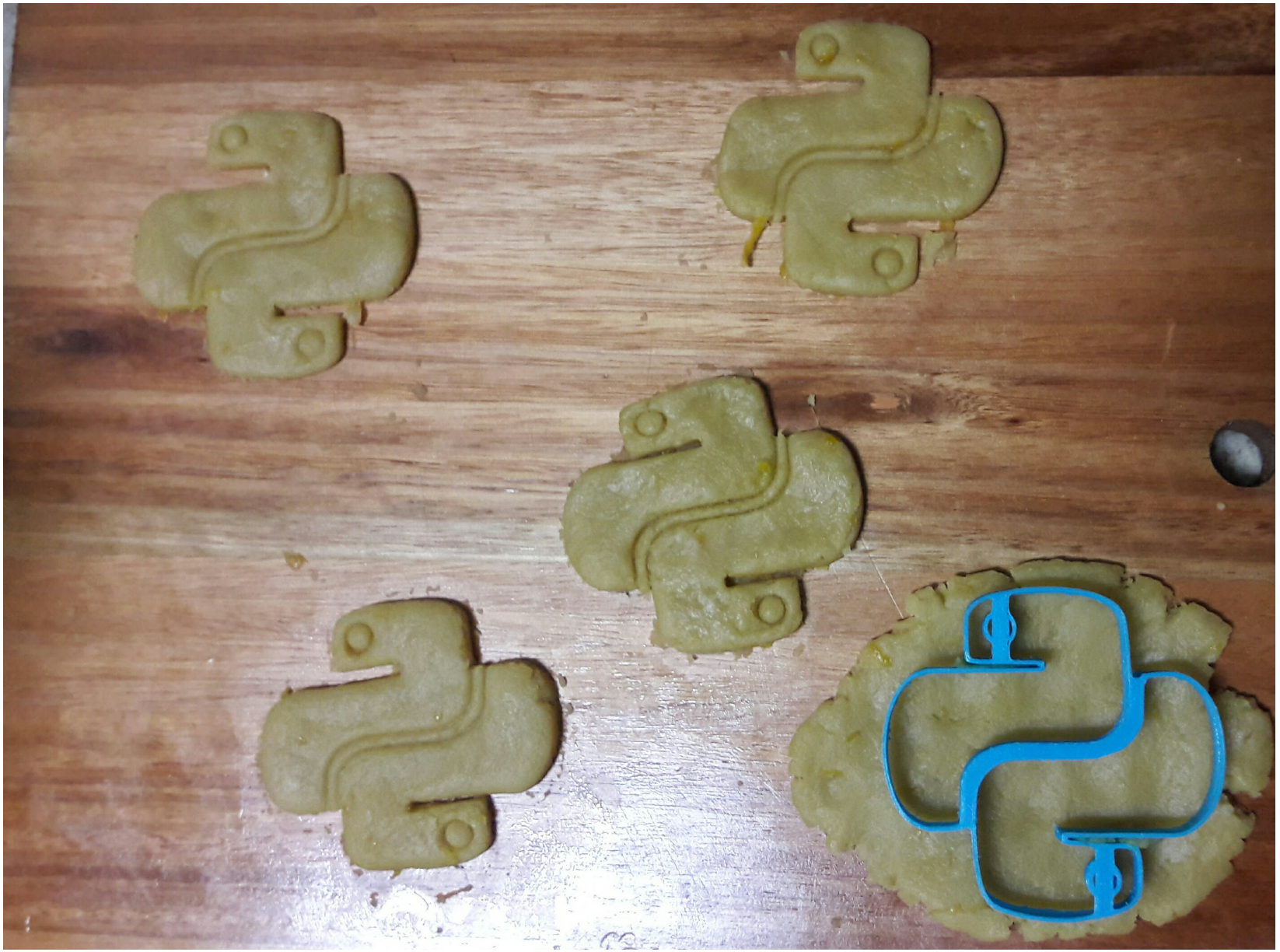


** Data collected from Gehin et al., 2008*

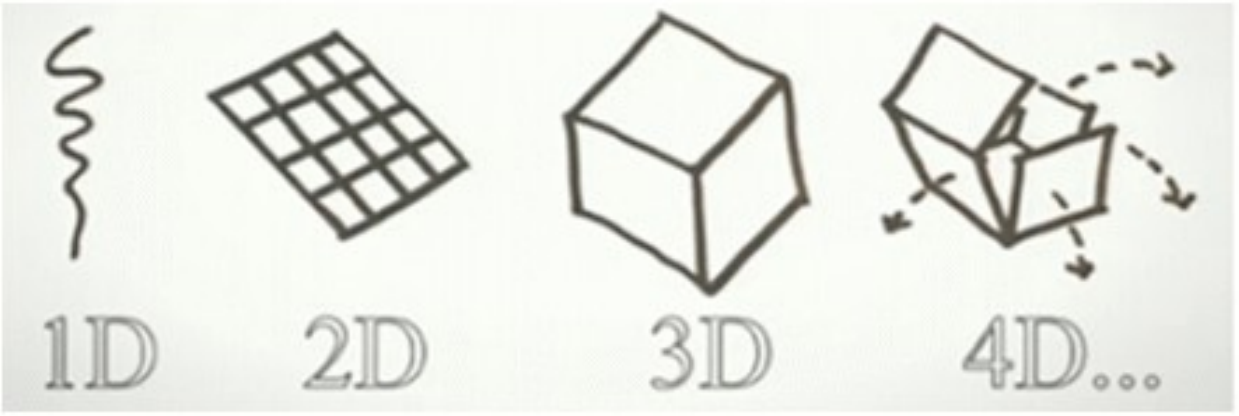
† ABS and PLA emission rates estimated through our studies are consistent with estimates by Stephens et al., 2013.

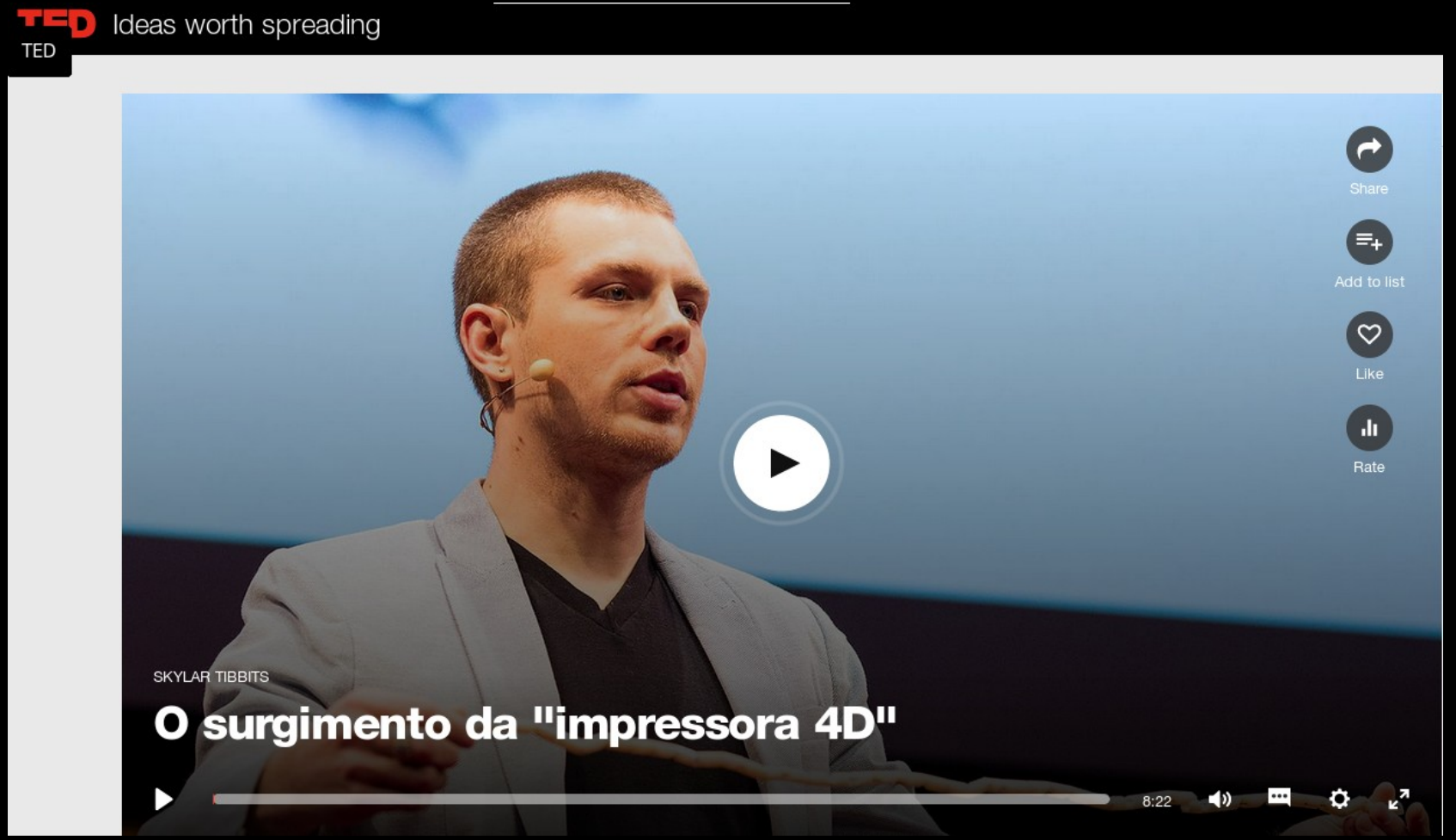
Setup da impressora

Troca de Hotend



Impressão 4D



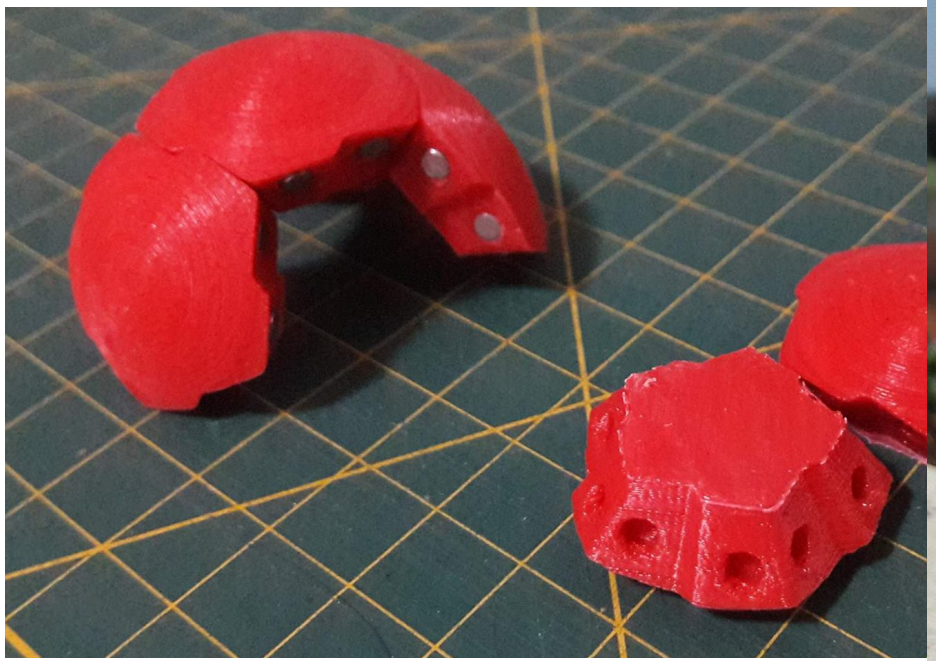


2013
Impressão 3D
Skylar Tibbits

https://www.ted.com/talks/skylar_tibbits_the_emergence_of_4d_printing?language=pt-br

Impressão 4D

Impressão 4D



TIPOS

Manufatura aditiva

Estereolitografia
Stereo**l**ithography **A**parattus(SLA)

Processamento Digital de Luz
Digital **L**ight **P**rocessing (DLP)

Modelagem por Deposição de material Fundido
Fused **D**eposition **M**odeling (FDM)

Sinterização Seletiva a Laser
Selective **L**aser **S**intering (SLS)

Fusão Seletiva a Laser
Selective **L**aser **M**elting (SLM)

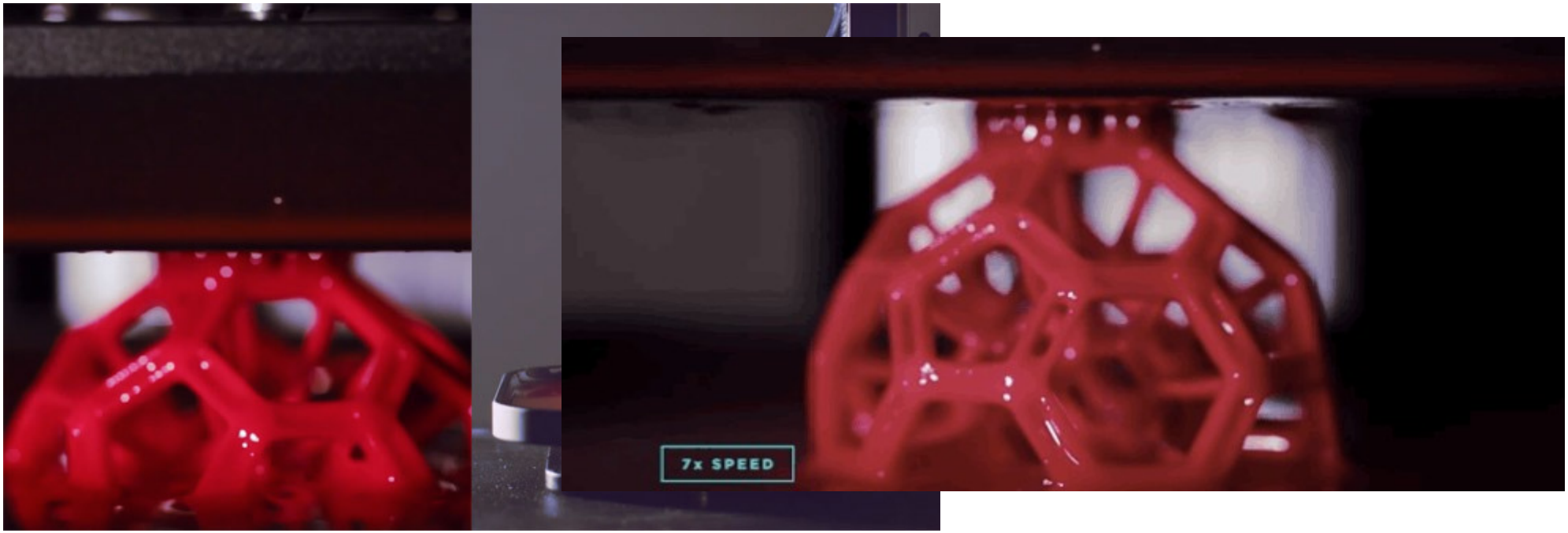
Fusão por feixe de elétrons
Electronic **B**eam **M**elting (EBM)

Manufatura Laminar de Objetos
Laminated **O**bject **M**anufacturing (LOM)

Prototipagem rápida, manufatura aditiva, impressão 3D

EXTRUSÃO & SINTERIZAÇÃO

SLS

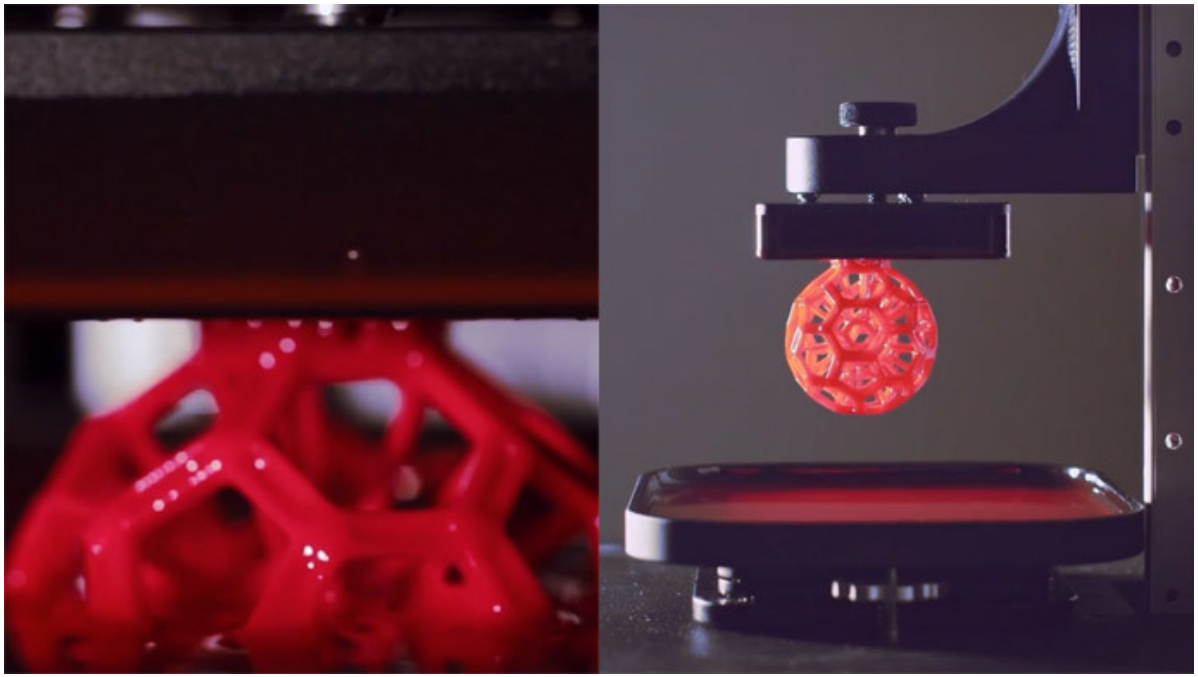


RESINAS CURÁVEIS

Prototipagem rápida, manufatura aditiva, impressão 3D

EXTRUSÃO & SINTERIZAÇÃO

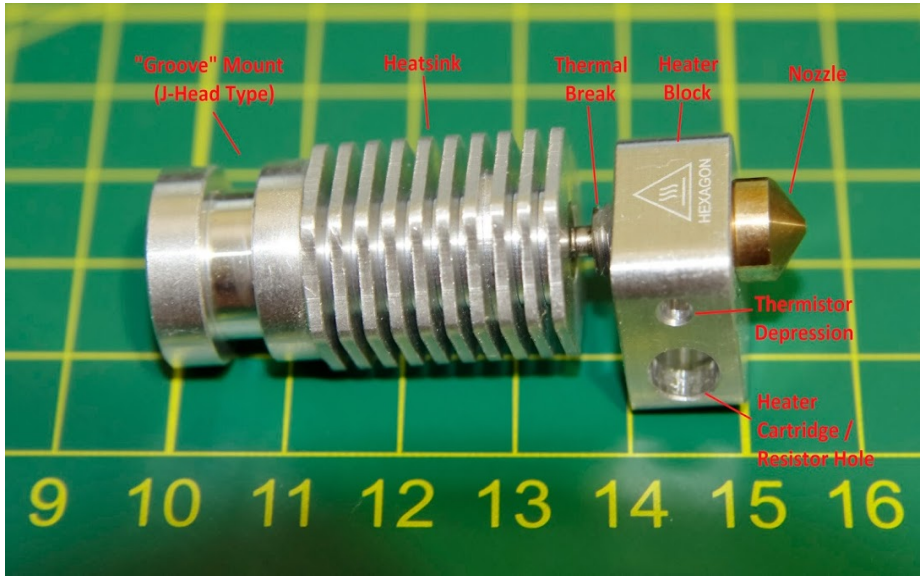
SLS



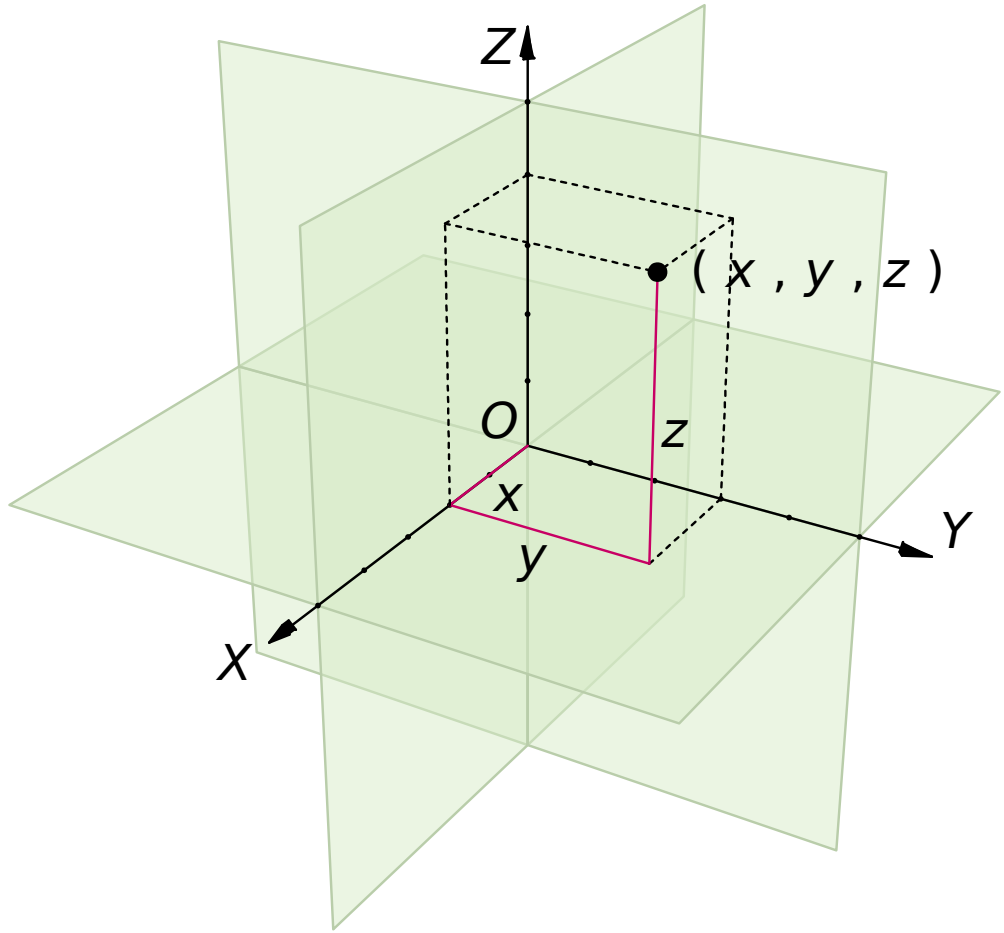
RESINAS CURÁVEIS

FDM

TERMOPLÁSTICOS

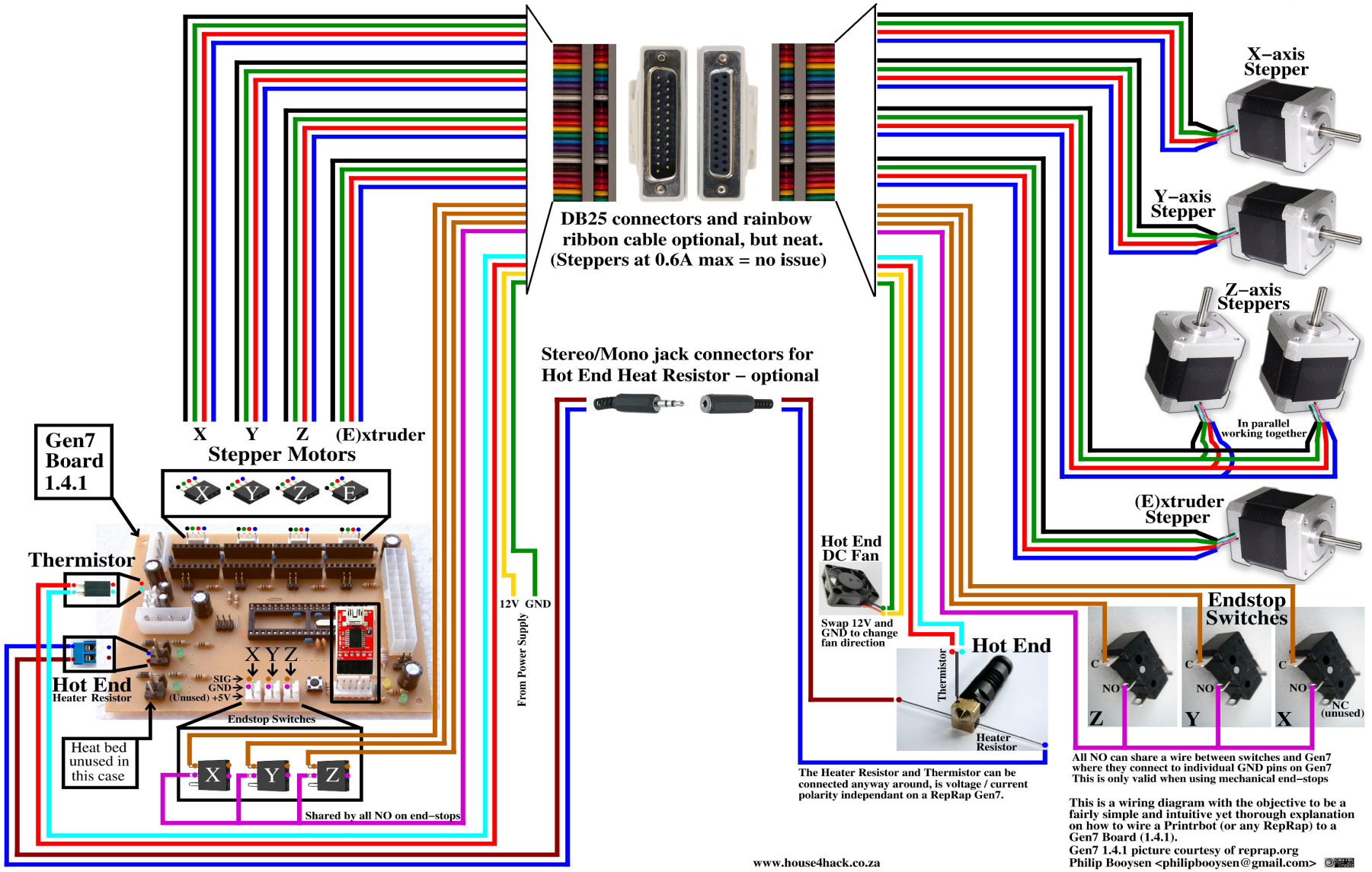

"Groove" Mount
(J-Head Type)
Heatsink
Thermal
Break
Heater
Block
Nozzle
HEXAGON
Thermistor
Depression
Heater
Cartridge /
Resistor Hole
9 10 11 12 13 14 15 16


PCB Heatbed MK2B DUAL POWER
HOT ZONE
DO NOT TOUCH!
POWER
120
240
CAUTION:
Still hot after
Do not leave unattended!
Keep away from children!
WARNING: Still hot after LED goes out!


Z
(x , y , z)
O
z
x
y
Y
X

Wire a RepRap 3D Printer to a Generation 7 Electronics RepRap Controller

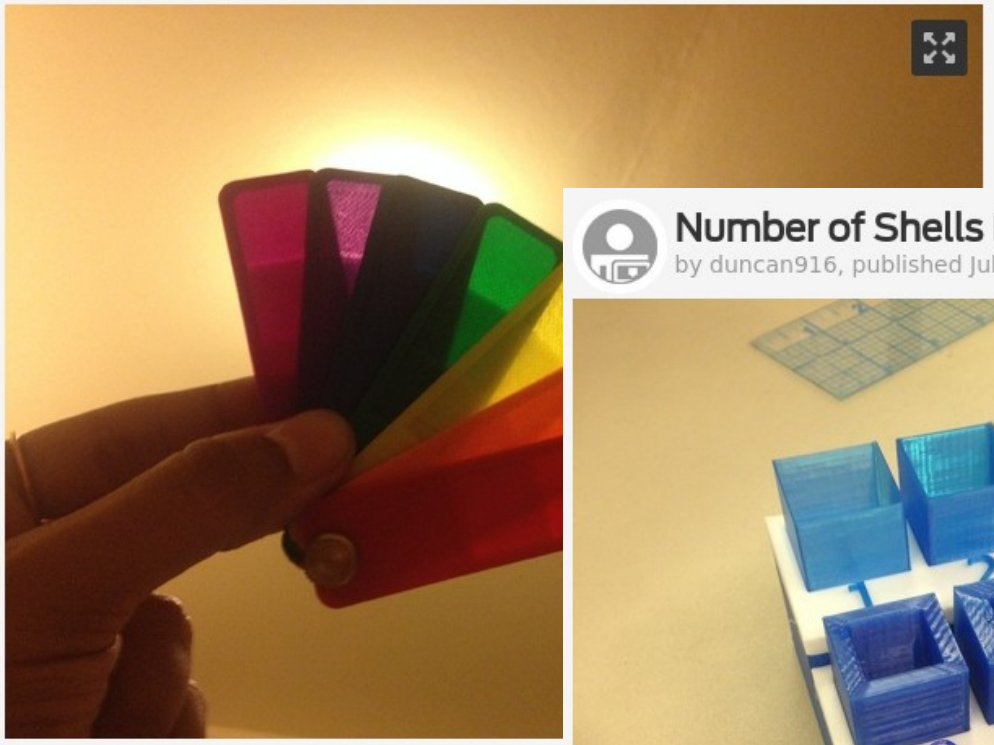
(Revision 2)

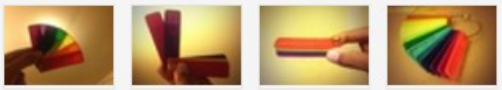


www.house4hack.co.za

A Better Filament Swatch for Designers

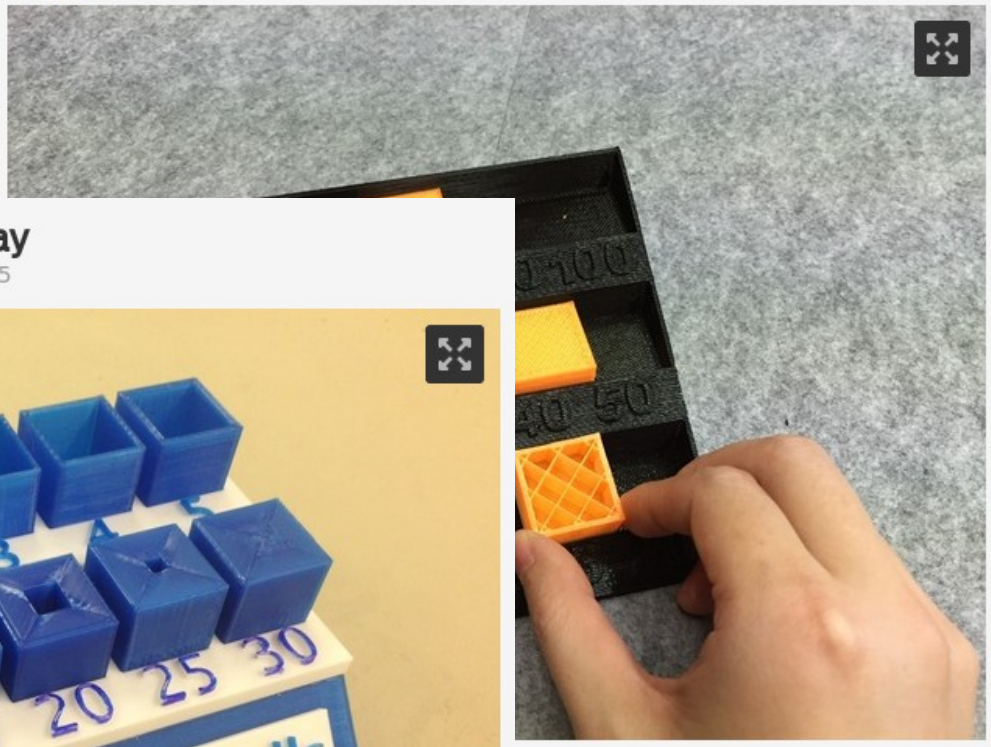
by cowkitty, published Feb 3, 2015





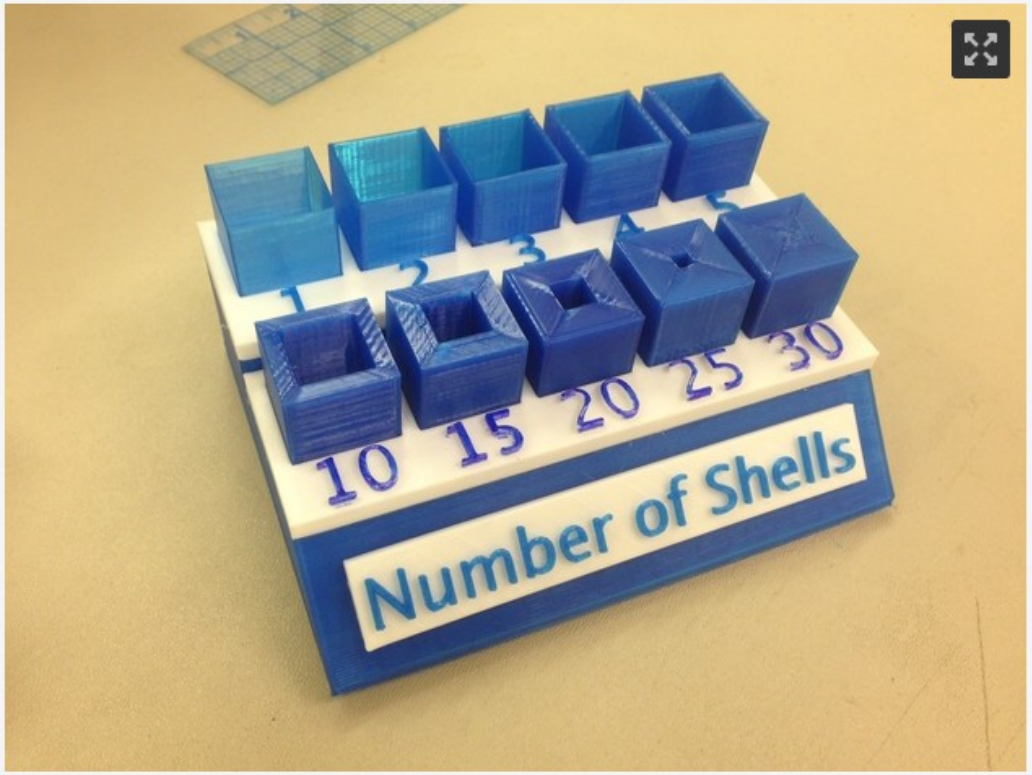
Infill percent display for teaching tool of 3D printer

by Eunny, published Sep 7, 2015



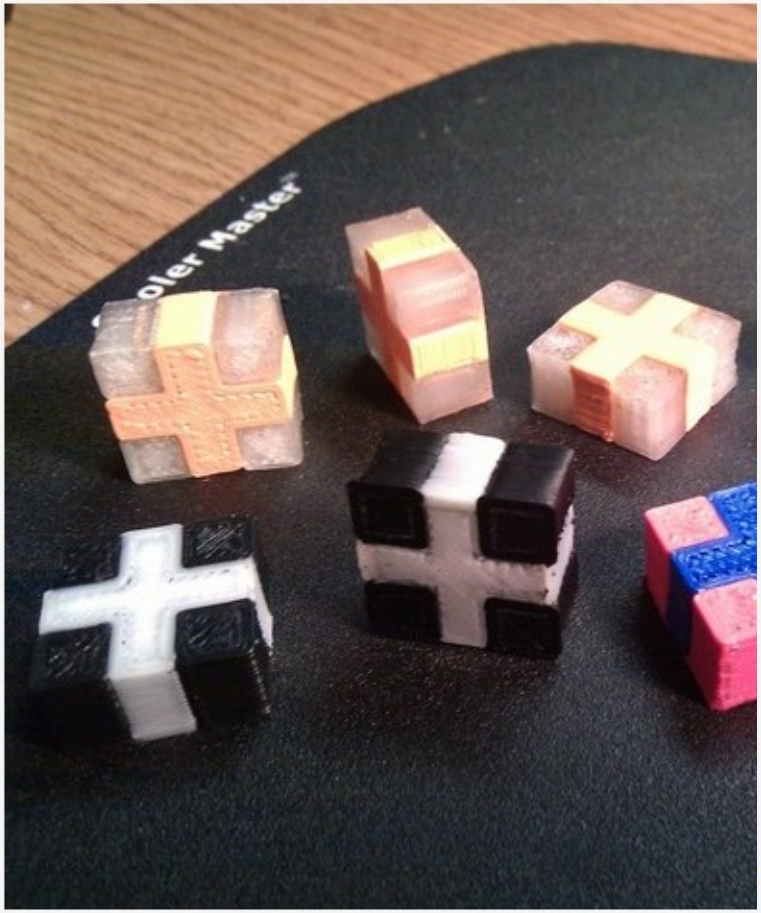
Number of Shells Display

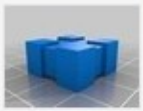
by duncan916, published Jul 16, 2015



Calibration piece for 2 extruder/color printing

by dob71, published Feb 18, 2012



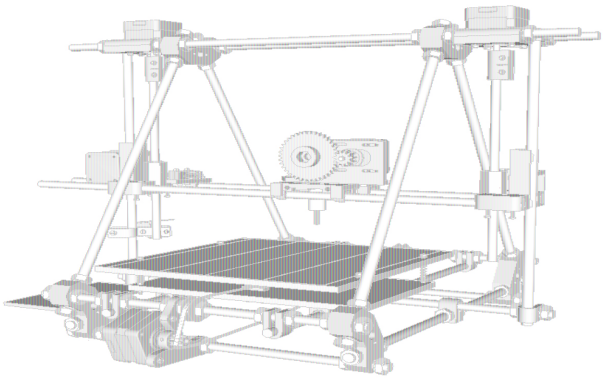


2-color tree frog

by nervoussystem, published May 13, 2014

RepRap Family Tree

V2.9 (06-06-2011)



2006 2007 2008 2009 2010

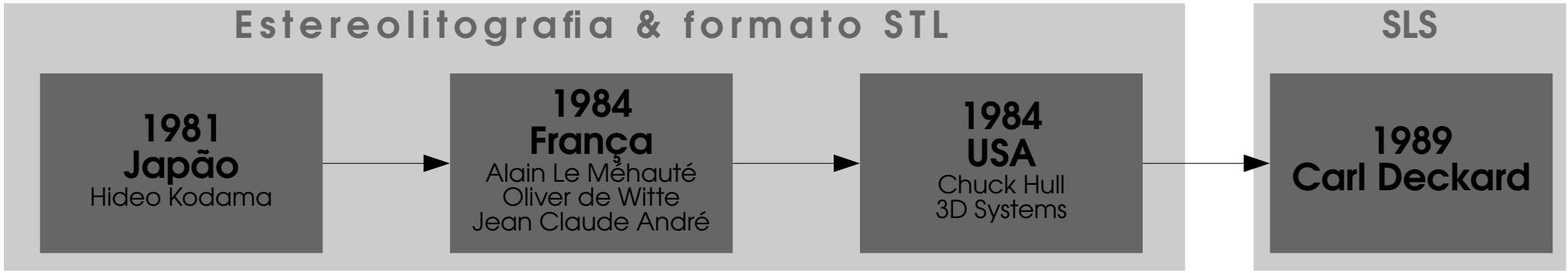
A.R.N.I.E
Tommelise
RepStrap
Zaphod
Darwin
Lego RepStrap
lasercut /wooden Darwin
Ponoko lasercut Darwin
casted Darwin
Sells Mendel
Prusa Mendel
Huxley Se
Rusty
Mini-mendel
Huxley
Wolfstrap
Isaac Mendel
Techzone Mendel
Catalyst
Foton
Megamendel
Apollo
T-Rep
LeBigRep
Eiffel
Kludge
McWire
JunkStrap
DeltaBot
Helium
FabP
Bonsai RepStrap
RepOlaRap
MetalicaRap
Columbus
Shapercube 1.0
Up! 3d printer
Makerb
Makerbot Cupcake
Cupcakestrap
Rapman Pro / Bfb 3000
Rapman
Fabaroni
Fab@home Model 1
Model 1.2
Model 2
CandyFab 4000
CandyFab 5000
CandyFab 6000

Working
Experimental
Concept
Commercial
Other oshw project
Common
Less common
Work in progress

Emmanuel Gilloz

HISTÓRIA

Estereolitografia & formato STL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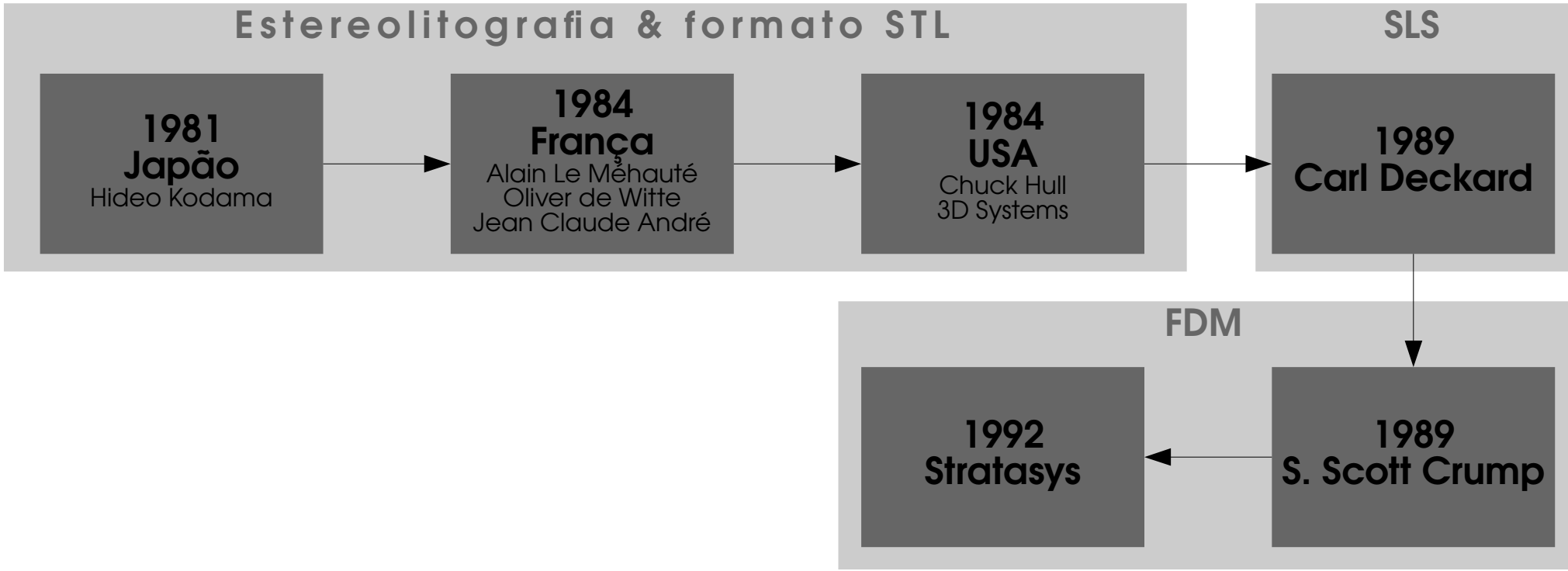
1981
Japão
Hideo Kodama
1984
França
Alain Le Méhauté
Oliver de Witte
Jean Claude André
1984
USA
Chuck Hull
3D Systems
SLS
1989
Carl Deckard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Jean Claude André
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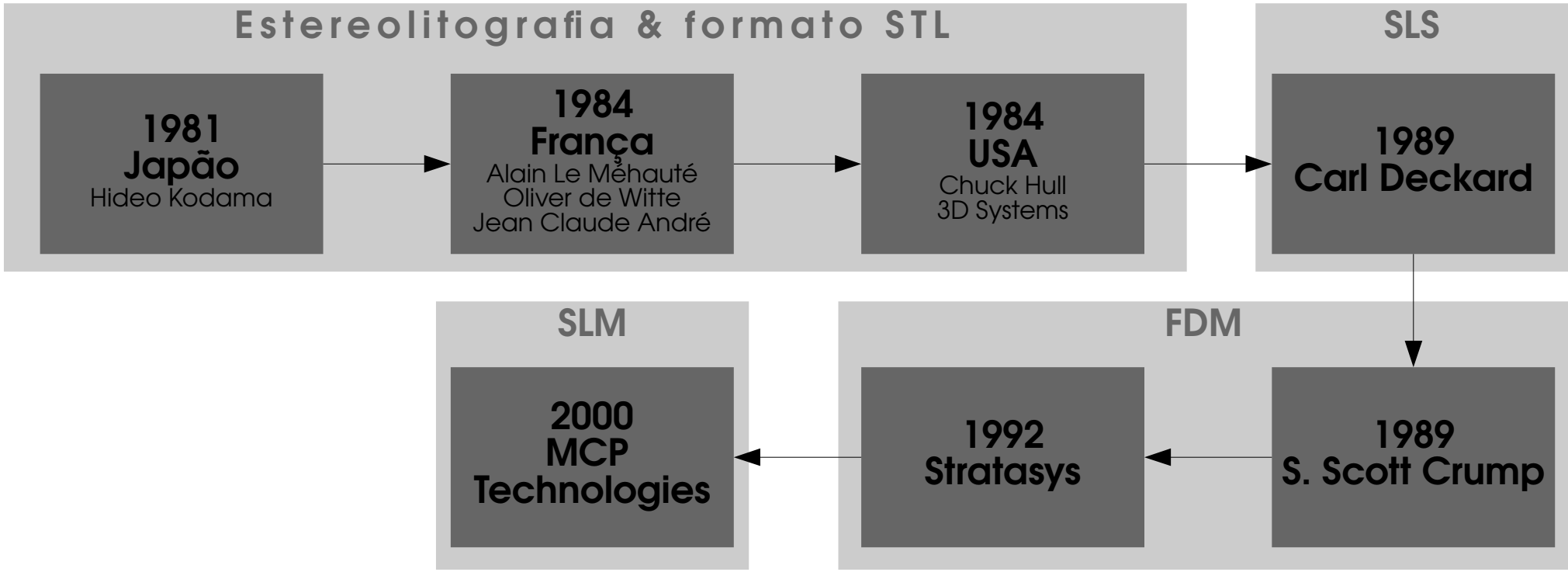
USA
Chuck Hull
3D Systems
SLS
1989
Carl Deckard
FDM
1989
S. Scott Crump
1992
Stratasys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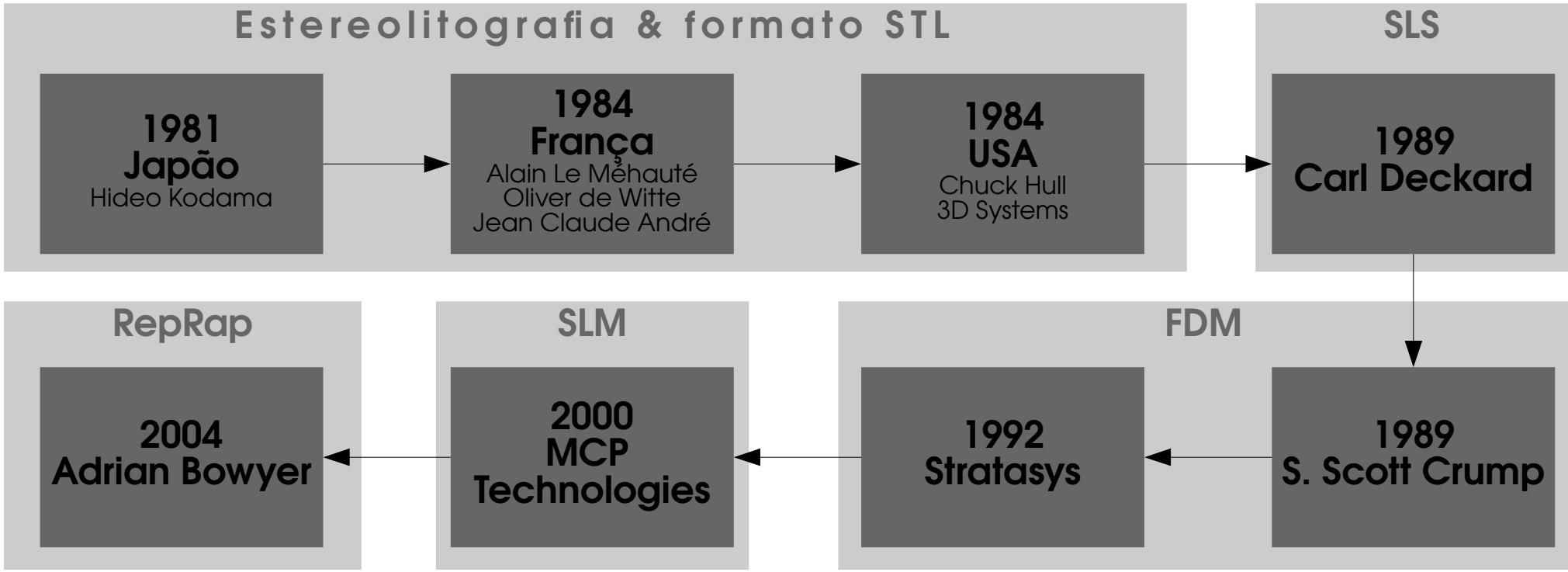
Chuck Hull
3D Systems
SLS
1989
Carl Deckard
SLM
2000
MCP
Technologies
FDM
1992
Stratasys
1989
S. Scott Crump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Chuck Hull
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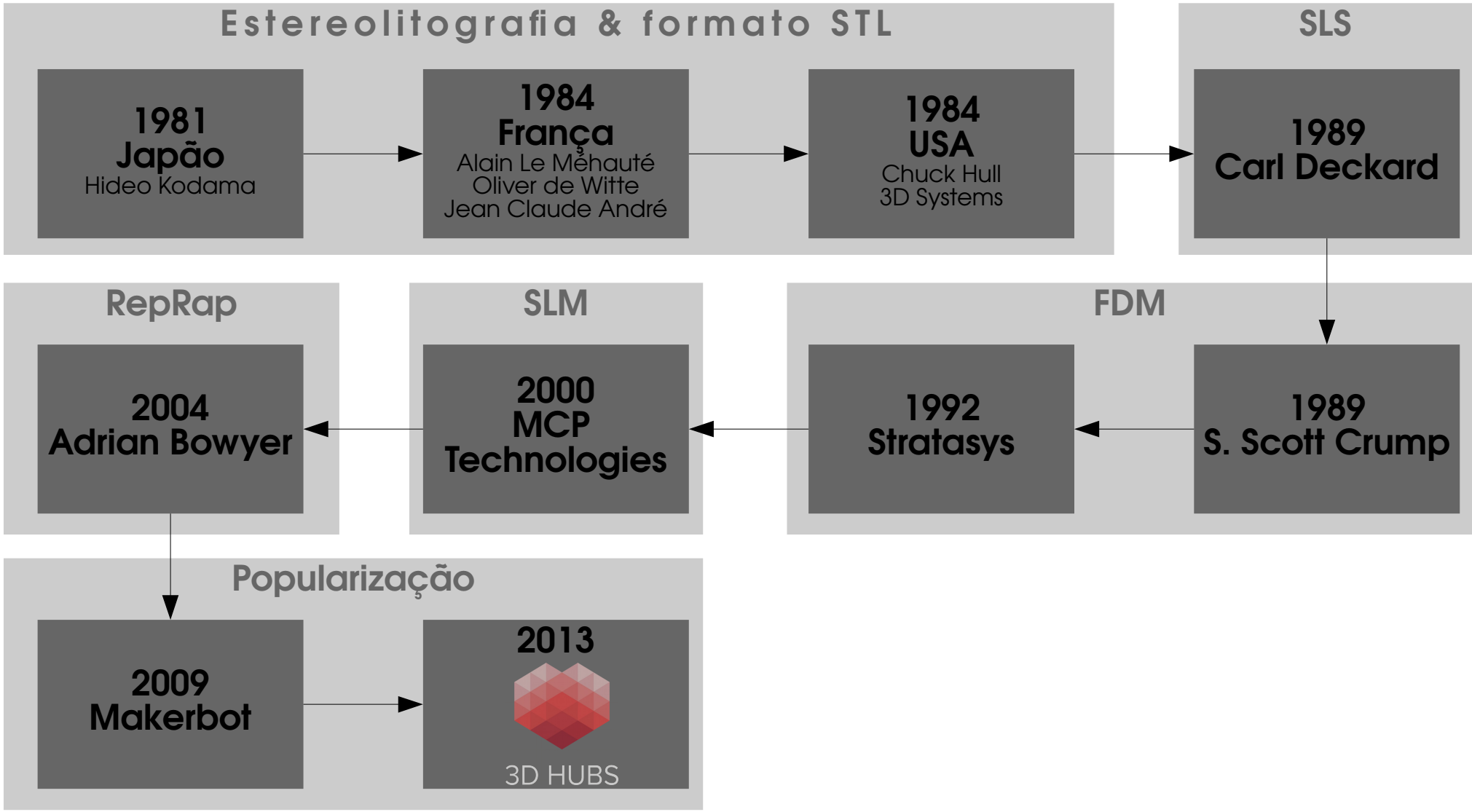
SLS
1989
Carl Deckard
RepRap
2004
Adrian Bowyer
SLM
2000
MCP
Technologies
FDM
1992
Stratasys
1989
S. Scott Crump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França
Alain Le Méhauté
Oliver de Witte
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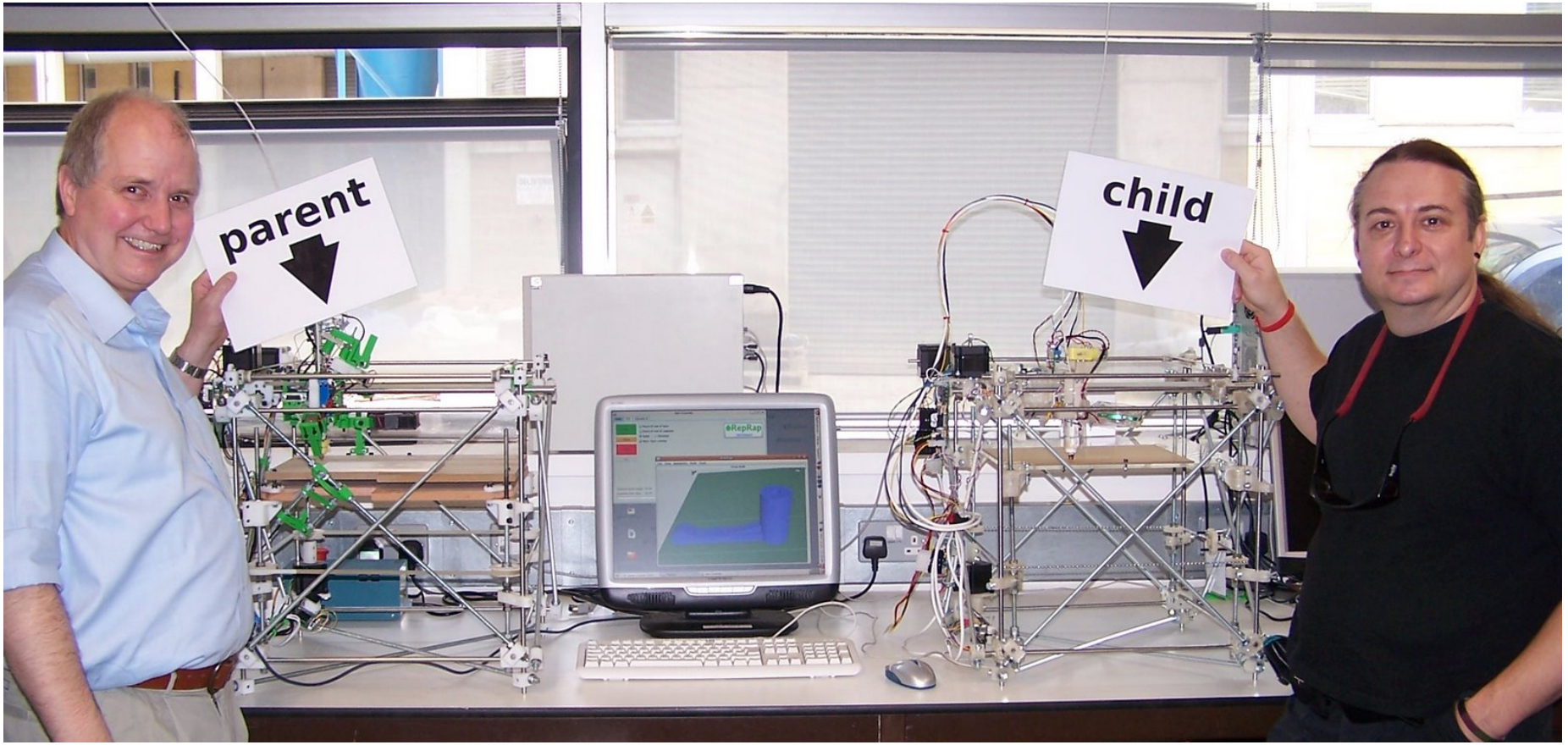
RepRap
2004
Adrian Bowyer
SLM
2000
MCP
Technologies
FDM
1992
Stratasys
1989
S. Scott Crump
Popularização
2009
Makerbot
2013
3D HUBS

Adrian Bowyer: RepRap – 2006 – GNU GPL



RepRap

reprap.org

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Quilling "Swan"

by TanyaAkinora, published Feb 19, 2016

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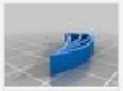
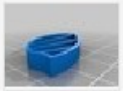
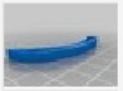

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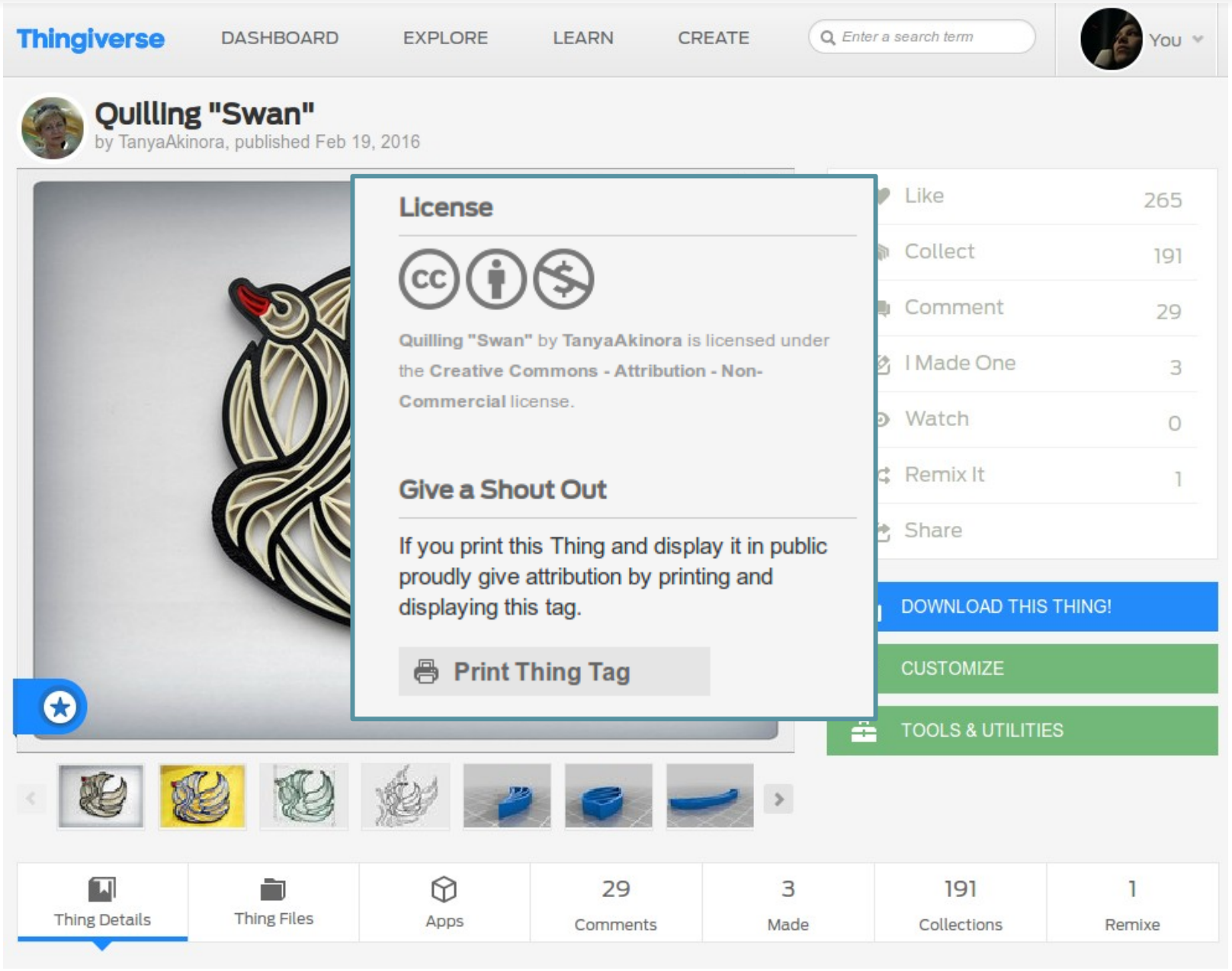
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LEARN
CREATE
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29 Comments
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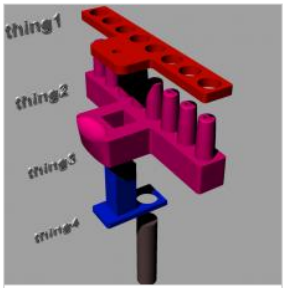
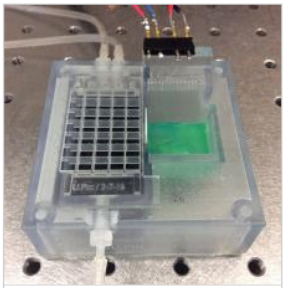
3DPX-003288
Laboratory Sample Rotator and Shaker with onb...
karancd

3DPX-003287
Laboratory Sample Rotator
karancd



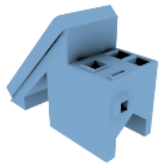
3DPX-003200
8 channel aspirator adaptor
marcociro1970

3DPX-003182
Laboratory Sample Rotator
karancd



3DPX-003134
Stomach Vagus Electrophysiology Testing Chamb...
chorn

3DPX-003133
Peripheral Nerve Electrophysiology Testing Ch...
chorn



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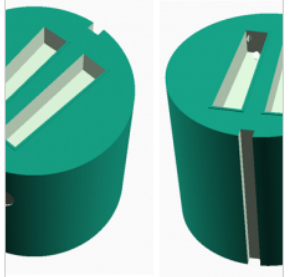
Spec Holder V4_1



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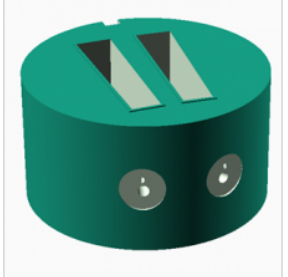
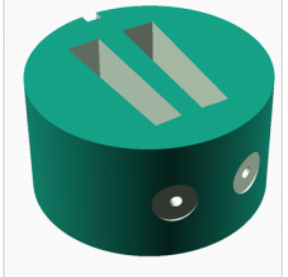
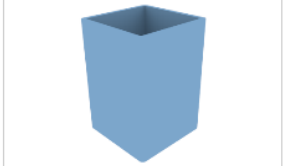
Centerpiece for fluorescence AUC



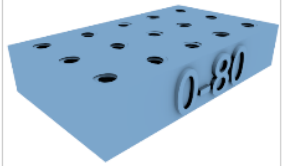
3DPX-002874
AUC double sector centerpiece with gasket and...



3DPX-002873
analytical ultracentrifugation double sector...



3DPX-002650
Graduated mold for US gel



3DPX-002522
Screw Titration Blocks for Swing Cap 2.0 and...

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Propriedade Industrial

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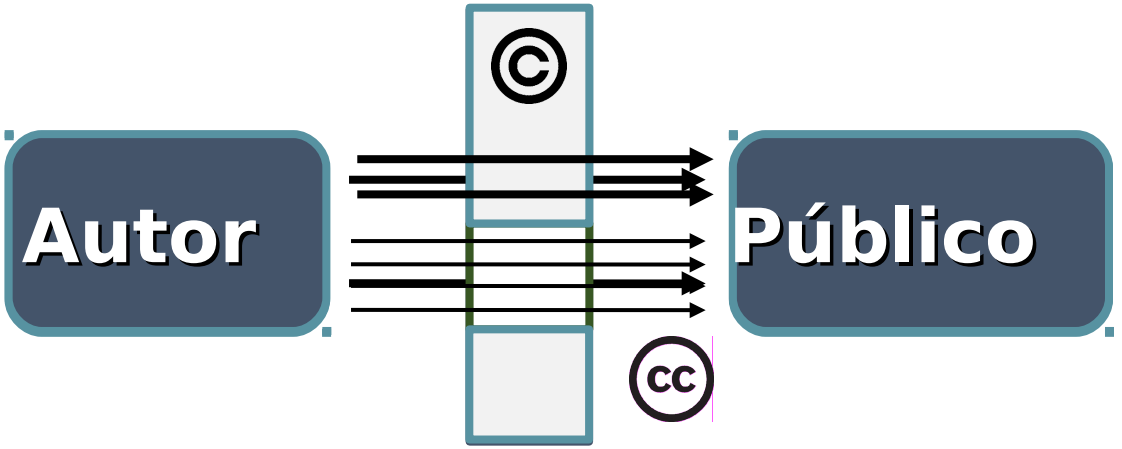

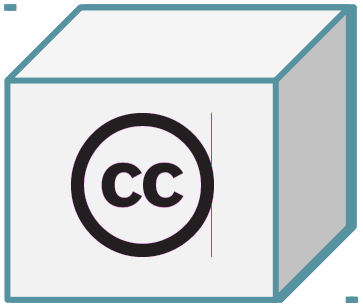

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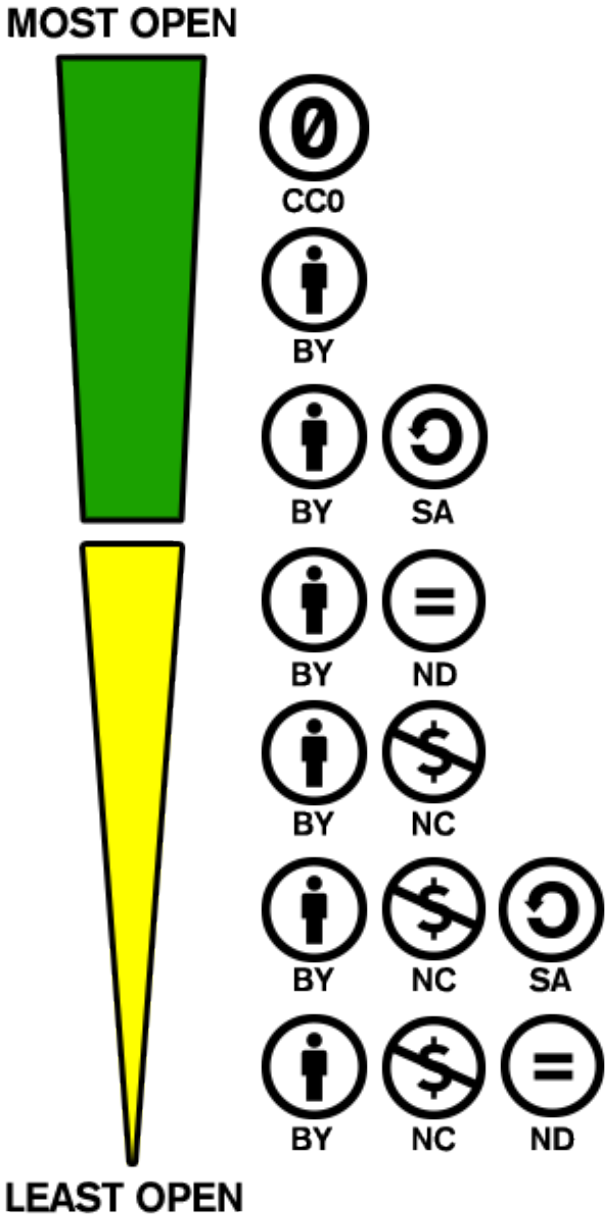

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```
#!/bin/bash
#
# pdb2stl
#
# Given a protein PDB, generate a STL file of the corresponding molecular
# surface (Connolly).
#
#
# Copyright 2015 Samuel Reghim Silva <samuelrsilva@usp.br>
#
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Os **problemas ambientais do Brasil**, aqueles que afetam o meio ambiente, são múltiplos, vastos e de enorme gravidade, prejudicando todos os seus biomas. Entre as principais ameaças estão a poluição da água, do ar e do solo, o desmatamento, o depósito e disposição de lixo em locais inadequados, a caça e a pesca predatórias, o desperdício de alimentos e de recursos naturais, e o aquecimento global. Todas elas têm

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RESEARCH ARTICLE

Customizable 3D Printed 'Plug and Play' Millifluidic Devices for Programmable Fluidics

Soichiro Tsuda[1,2], Hussain Jaffery[1], David Doran[1], Mohammad Hezwani[1], Phillip J. Robbins[1], Mari Yoshida[1], Leroy Cronin[1]*

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Abstract

Three dimensional (3D) printing is acti
technology to construct complex objec
scale. Previously we utilized Fused de
struct complex 3D chemical fluidic syst
3D milli-fluidic structures for programmable liquid handling and control of biological samples. Basic fluidic operation devices, such as water-in-oil (W/O) droplet generators for producing compartmentalized mono-disperse droplets, sensor-integrated chamber for online monitoring of cellular growth, are presented. In addition, chemical surface treatment techniques are used to construct valve-based flow selector for liquid flow control and inter-con-

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Open Hardware for CERN's accelerator control systems

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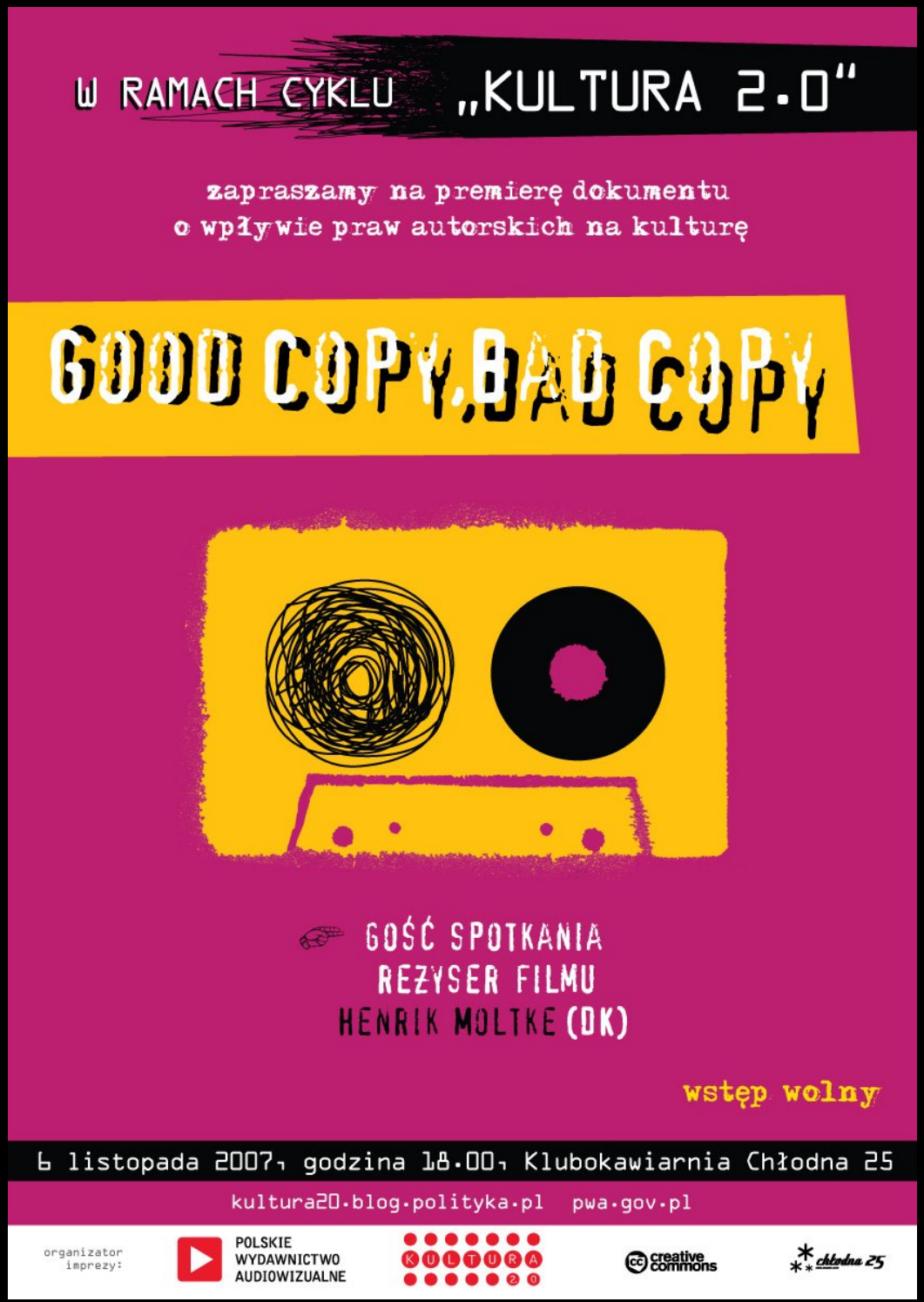
ABSTRACT: The accelerator control systems at CERN will be upgraded and many electronics modules such as analog and digital I/O, level converters and repeaters, serial links and timing modules are being redesigned. The new developments are based on the FPGA Mezzanine Card, PCI Express and VME64x standards while the Wishbone specification is used as a system on a chip bus. To attract partners, the projects are developed in an 'Open' fashion. Within this Open Hardware project new ways of working with industry are being evaluated and it has been proven that industry can be involved at all stages, from design to production and support.

KEYWORDS: Data acquisition circuits; Manufacturing; Hardware and accelerator control systems; Detector control systems (detector and experiment monitoring and slow-control systems, architecture, hardware, algorithms, databases)



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