

The Personal Design Manifesto

Prof. Jan Borchers

Media Computing Group

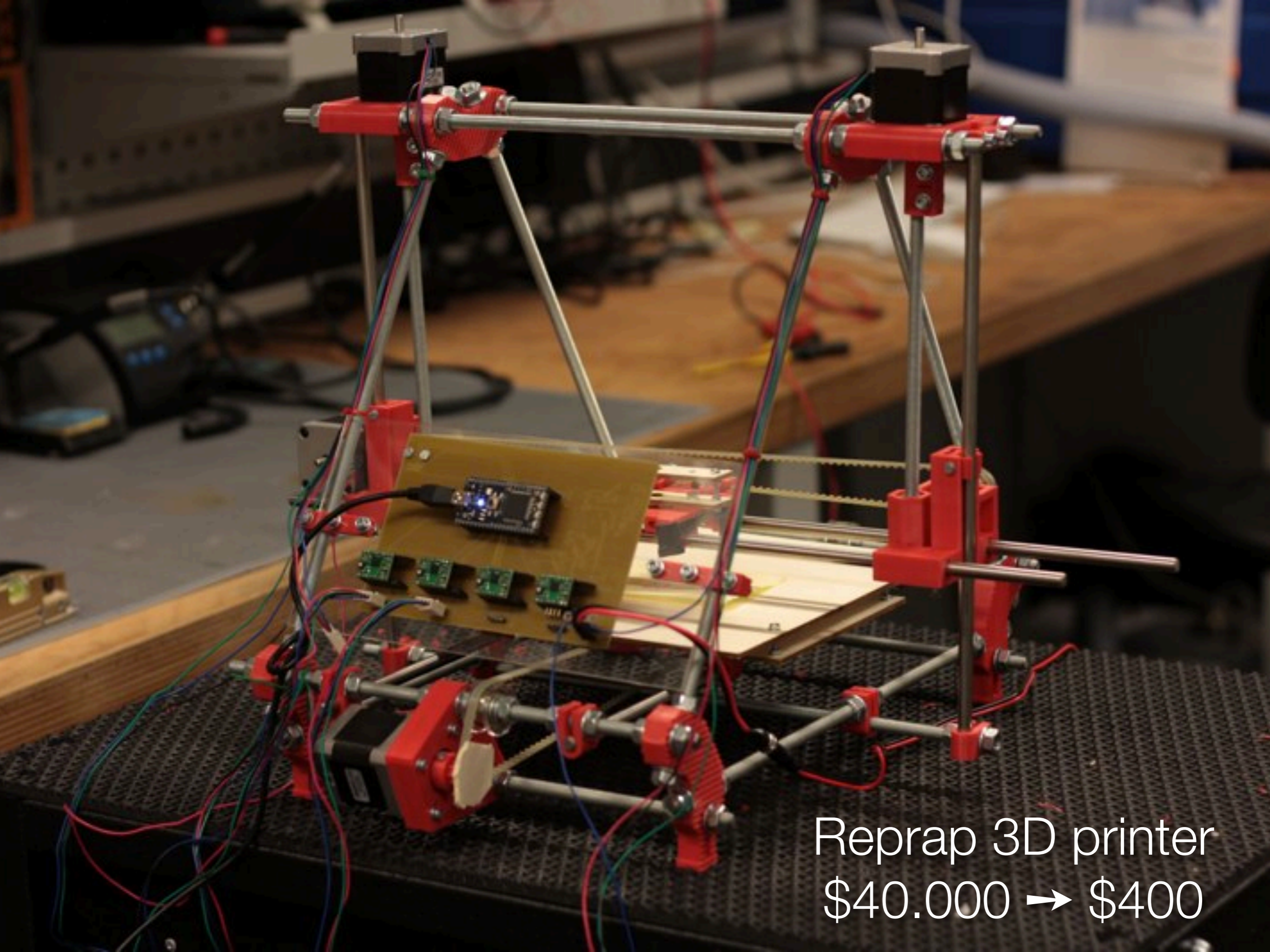
RWTH Aachen University

hci.rwth-aachen.de • personaldesign.cc

FabLabCon 2013 • Aachen • Sep 9, 2013

①

Personal Design,
not Digital Fabrication,
is the 3rd Digital Revolution.

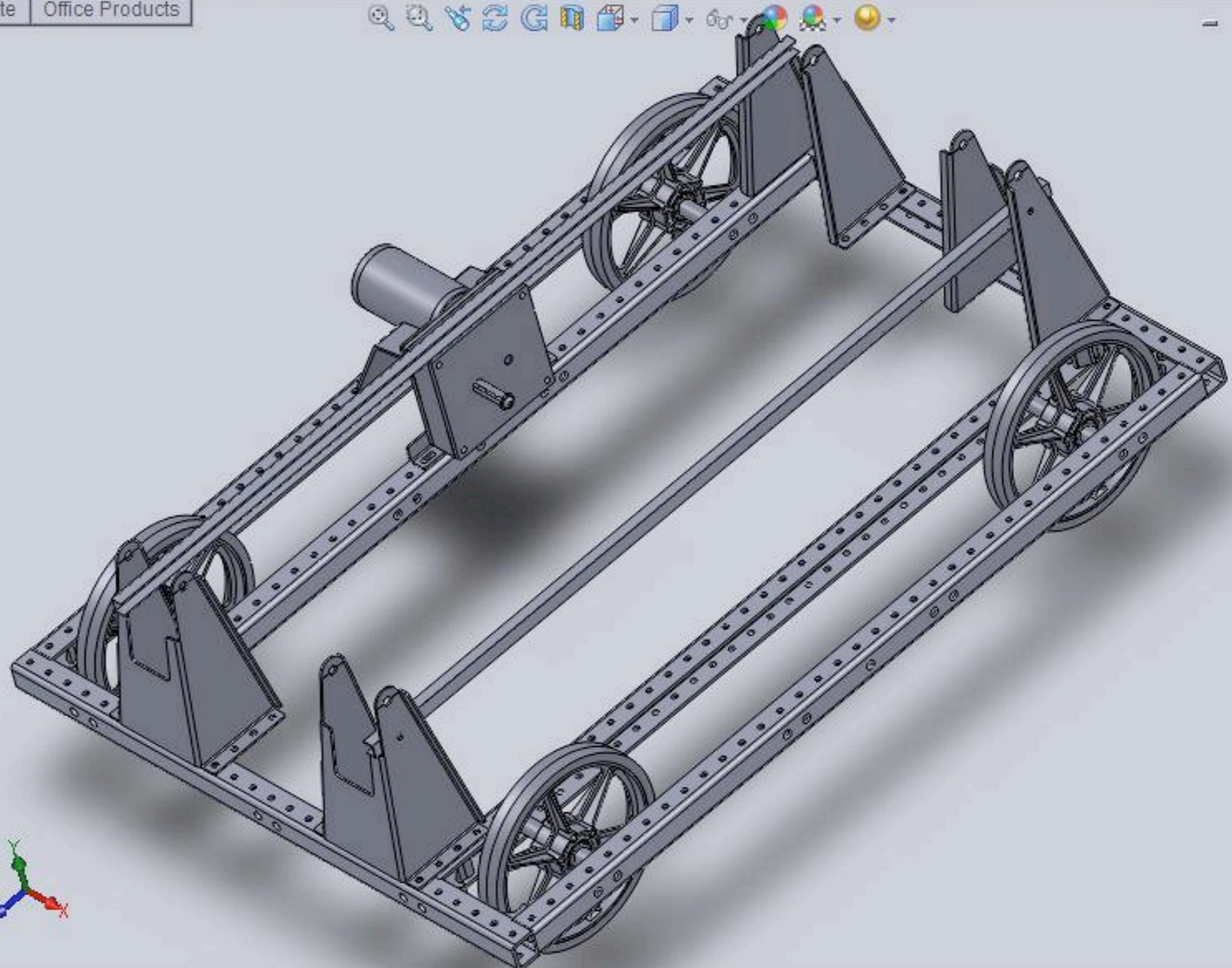


Reprap 3D printer
\$40.000 → \$400



Assembly | Layout | Sketch | Evaluate | Office Products

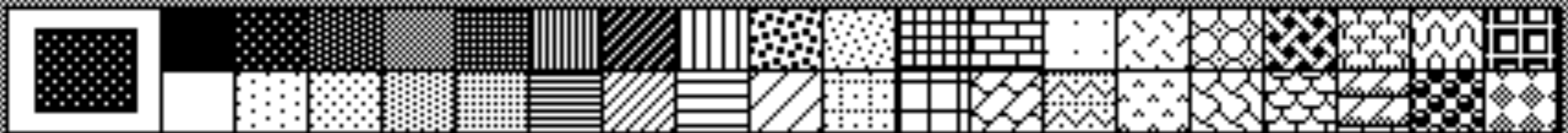
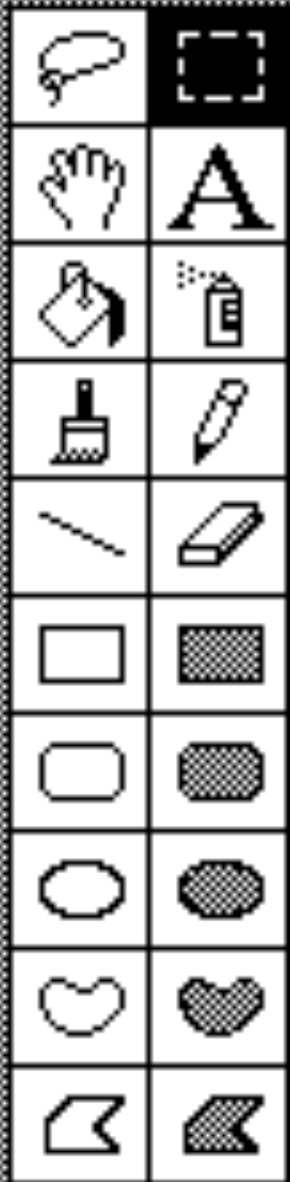
- Robot (Default<Display State-1>
 - Sensors
 - Annotations
 - Front Plane
 - Top Plane
 - Right Plane
 - Origin
 - (f) C 27<1> (Default<<Default
 - Corner<2> (Default<<Default
 - Corner<3> (Default<<Default
 - Corner<4> (Default<<Default
 - Corner<5> (Default<<Default
 - C 37.25<1> (Default<<Defau
 - C 37.25<2> (Default<<Defau
 - C 37.25<3> (Default<<Defau
 - C 37.25<4> (Default<<Defau
 - Corner<6> (Default<<Default
 - Corner<7> (Default<<Default
 - Corner<8> (Default<<Default
 - Corner<9> (Default<<Default
 - C 27<2> (Default<<Default
 - (-) wheel_assembly<1> (Defa
 - (-) wheel_assembly<2> (Defa
 - (-) wheel_assembly<3> (Defa
 - (-) wheel_assembly<4> (Defa
 - (-) wheel sp2<2> (Default<<L
 - (-) wheel sp2<3> (Default<<L
 - (-) wheel sp2<4> (Default<<L
 - (-) wheel sp2<5> (Default<<L



Model | Motion Study 1



Altair: \$397 (1975)



②

Personal Design Demands New UIs.

<http://www.thingiverse.com/thing:1005>

a MakerBot Industries website

THINGIVERSE

[THINGS](#) [TOOLS](#) [TAGS](#) [BLOG](#)

Welcome back, [jan](#).
 Thingiverse is awesome because of you. [LOG OUT](#)

[SEARCH](#)

Thingiverse is a place to share digital designs that can be made into real, physical objects. Let's create a better universe, together!

[UPLOAD A THING](#)

FEATURED

Lego Compatible Disc Buttons

Created by [clothbot](#)

Created on Sep 13, 2009

Featured on Sep 14, 2009

How do you make a great idea like Makerbot-printable (clothing) buttons better?

Why, make them Lego Compatible! Naturally.

Update 2009/10/04: In the design files, the knobs are 5mm in diameter. I remeasured my source Lego disc after getting back some Shapeways test prints and the Lego knobs are actually closer to 4.8mm in diameter. I lucked out with my MakerBot-printed buttons; shrinkage brought them down to about 4.9mm in diameter. The Shapeways printed versions are more accurate, 5.00mm diameter, +/- 0.05mm. There's enough give in the plastic materials for them to still fit 'regulation size' lego blocks, but the metal one was simply too wide a diameter.

Update 2009/11/07: I've been playing around with OpenSCAD (<http://www.openscad.org/>) and came up with the attached DiscButton_20091107 variation. I even added bottom "sockets" to this variation. It's almost too easy when it's all code!

Disclaimer: LEGO is a trademark of the LEGO Group and these explorations are in no way associated with LEGO Group. Heck! The files are CC-licensed; nothing to stop them embracing and extending it themselves if they so chose! ;-)

[Tweet](#) 0 [Like](#) 1 [submit](#) [Flattr](#) 0

Sort By [Date](#) [Popular](#) [File Type](#)

DiscButton.stl
 2 mb / 361 downloads / 2 years ago

Instructions
 0. Download the STL. It prints four buttons.

ADVERTISEMENT
 AdChoices [The 3D Printer](#)

Make awesome stuff.

Flat is boring. Capture your world in 3D with free Autodesk 123D apps.

→ Meet the 123D Apps



123D

Design stuff you really want to make, send it straight to a 3D printer.

123D Catch

Automatically convert ordinary photos into extraordinary 3D models.

123D Sculpt

Shape and paint digital clay into amazing 3D sculptures on your iPad.

123D Make

Transform 3D models into a pattern for assembling real artful creations.

Full Preview

Cutting Preview

Zoom:

Capture Foto

Preview



VisiCut

<http://hci.rwth-aachen.de/visicut>

Laser Cutter



Epilog ZING @
Fablab



Material



Acrylic Glass



Total Height

mm

Dimensions

x mm

Mapping

Engrave



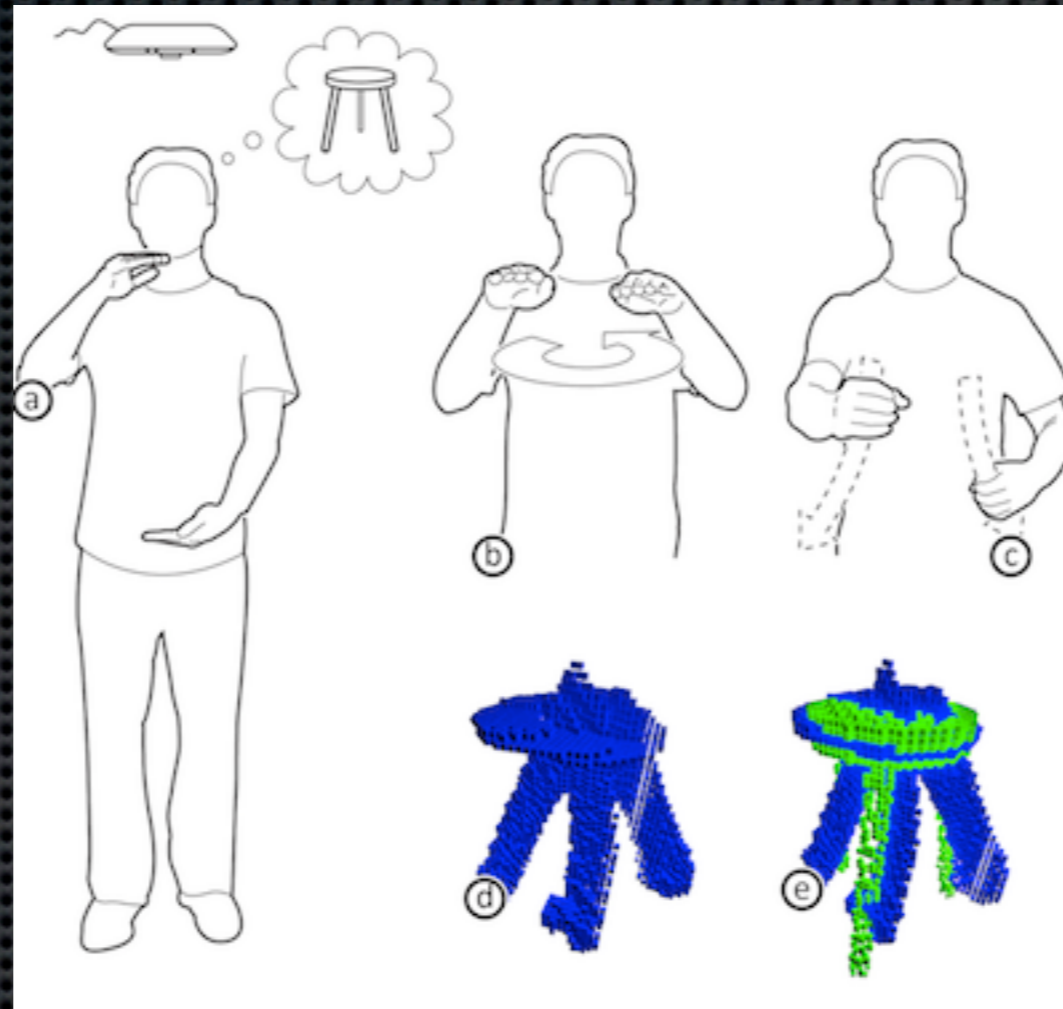
Custom

Estimated Time:

Calculate

Execute

Data Miming [Holz, CHI '11]



http://youtu.be/k05F8ls_czc



FRONT: Sketching Furniture (2007)

③

Personal Design Tools
Require Encoding Domain-
Specific Knowledge.



Sketch Chair
(Greg Saul, 2010)

④

Personal Design Offers a
Continuum of Options.

CAD

AI, Assistants, Templates

Crowdsourcing

Gesture

Touch&Haptics

3D Scan

Parameterization

Download/Query

⑤

Personal Design and
Personal Fabrication
Are Orthogonal.

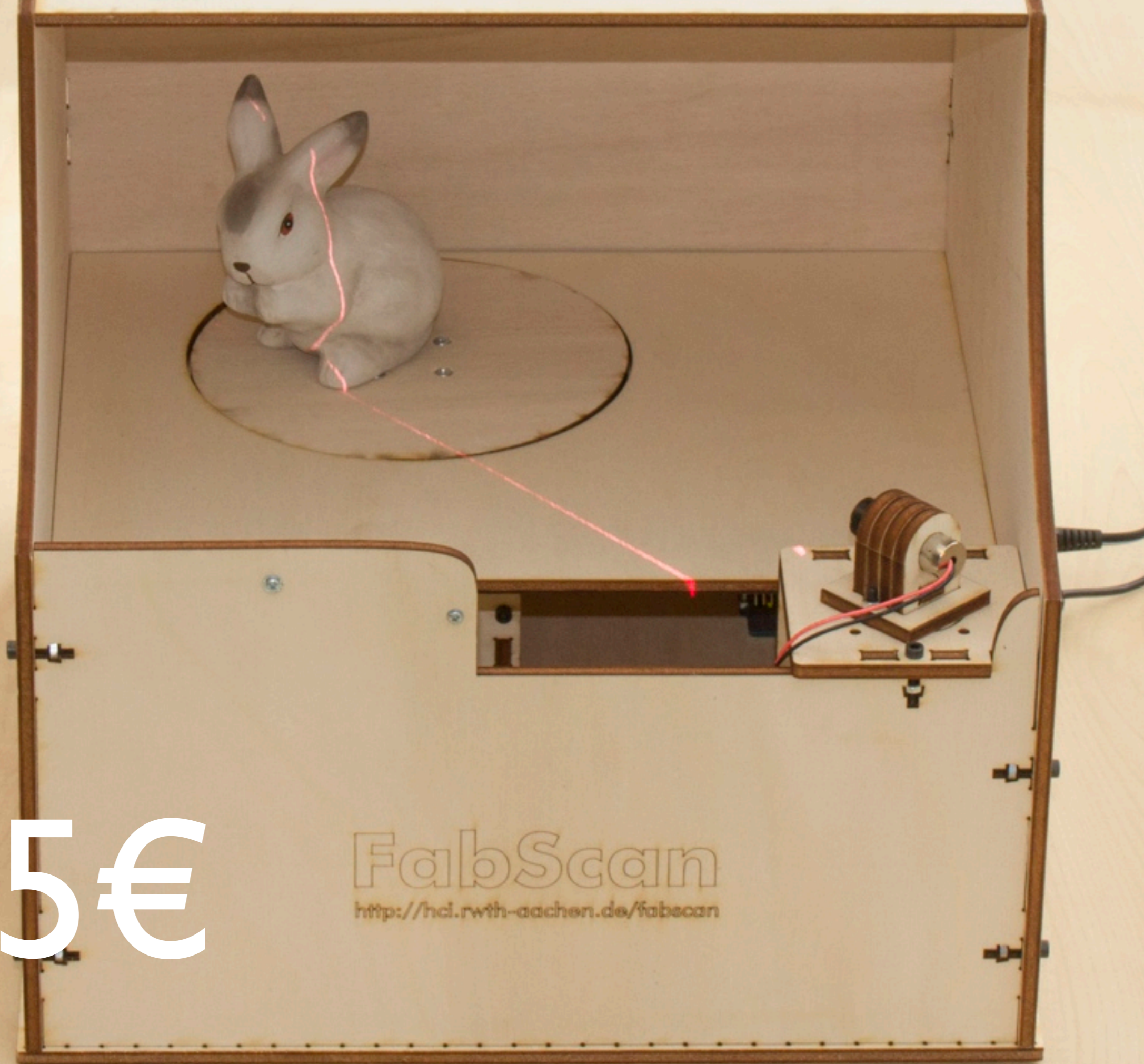
Personal Design vs. Personal Fabrication

	Local Design	Outsourced Design
Local Fabrication	AutoCAD +RepRap	Thingiverse
Outsourced Fabrication	Shapeways	Traditional



⑥

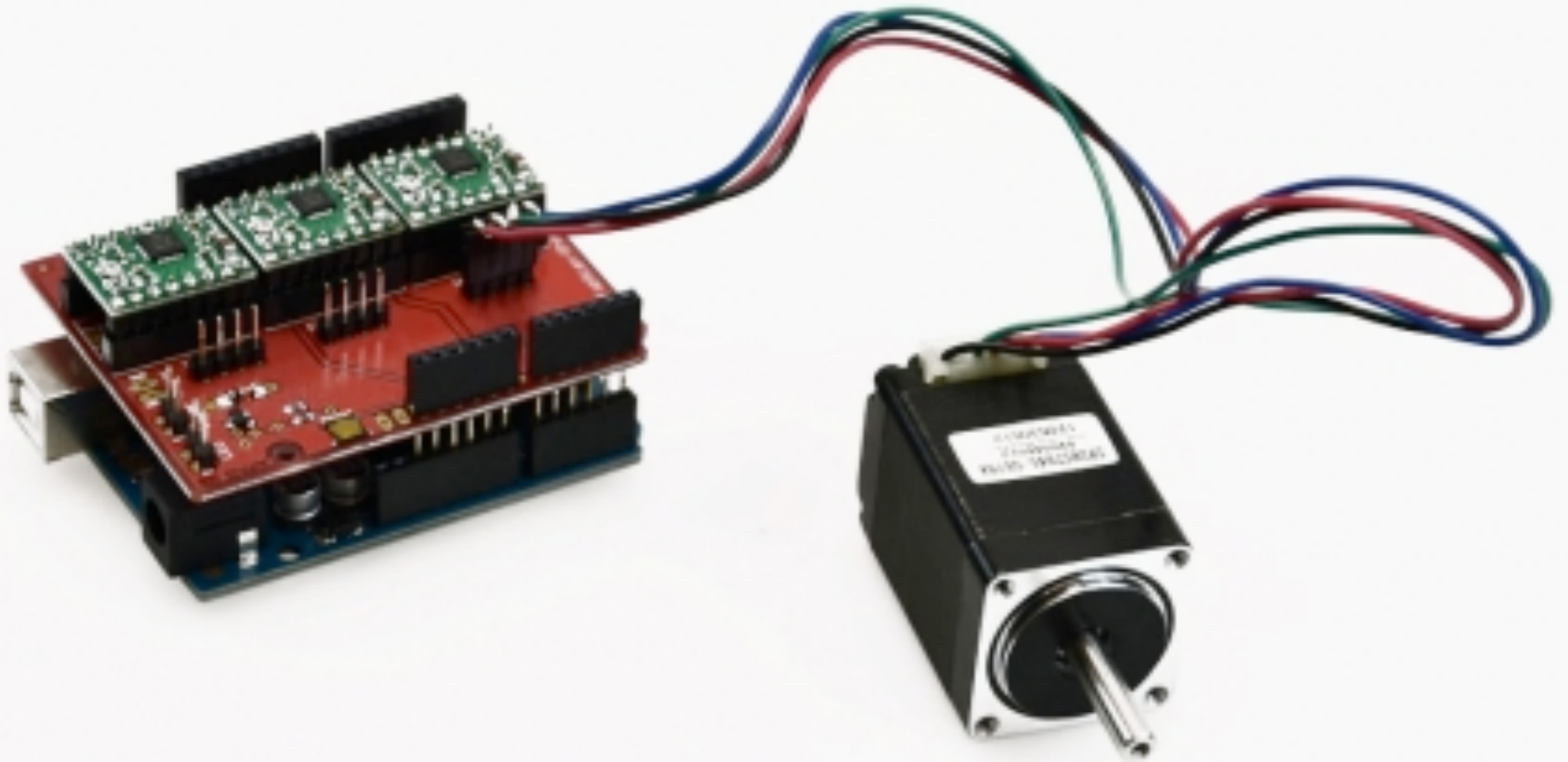
Open-Source Hardware Supports Personal Design.



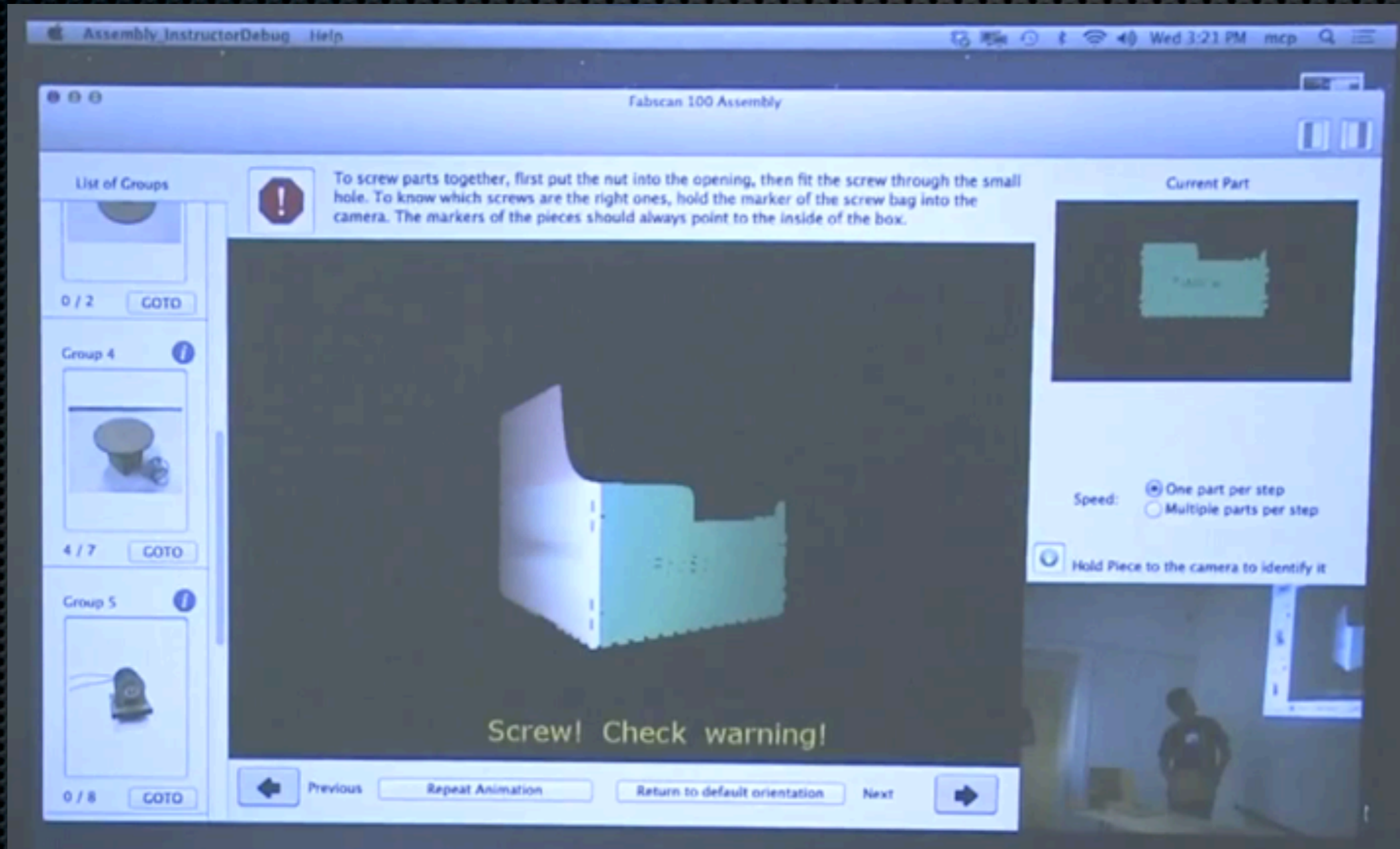
125€

FabScan
<http://hci.rwth-aachen.de/fabscan>

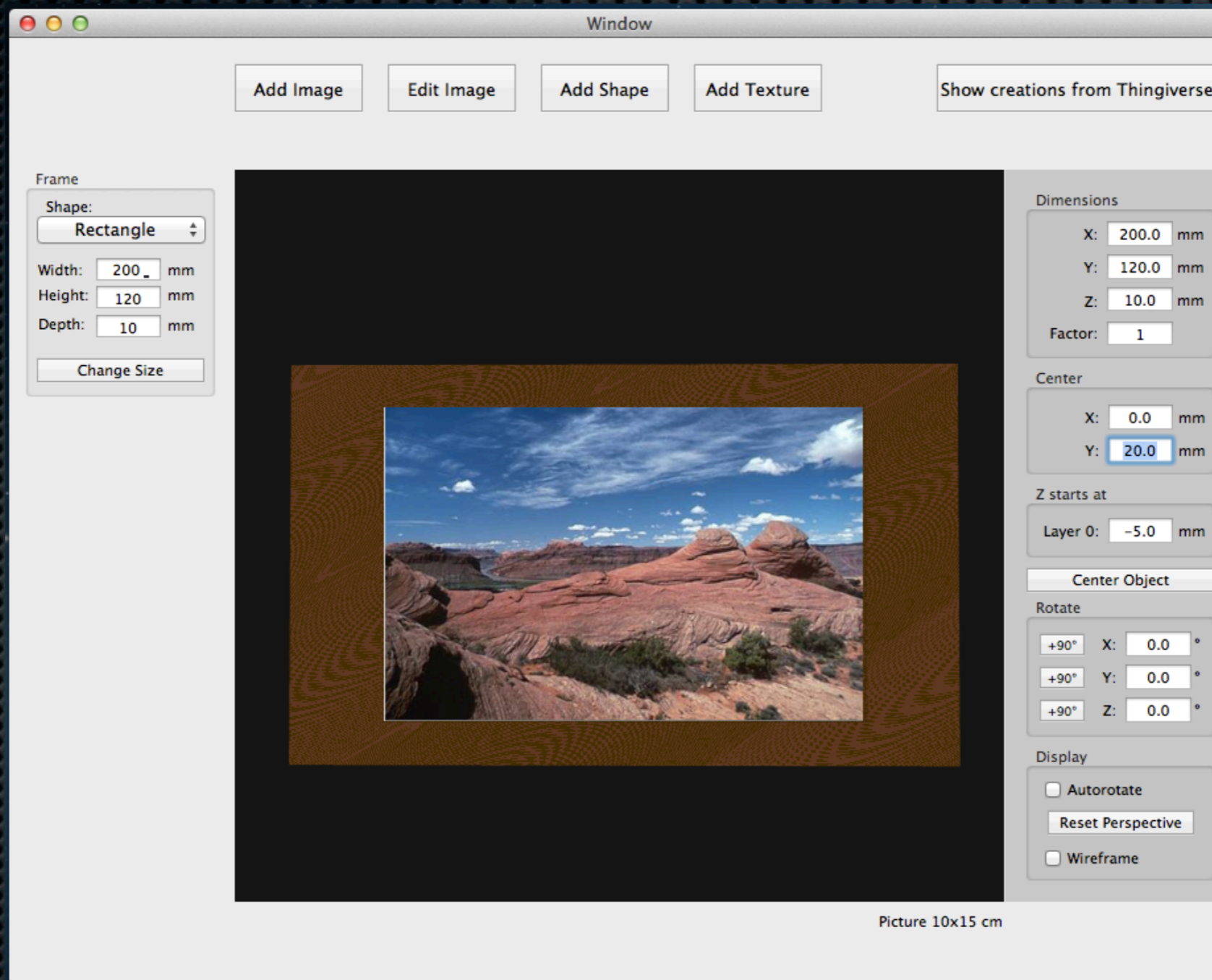
FabScan Shield



Interactive Assembly



Framer



FabFAQ

The screenshot shows a web browser window with the URL `review.fabcenter.de/detail.php?idquestions=55`. The page title is "FabFAQ" and the browser tab is "FabFAQ". The navigation menu includes "Questions", "Ask", "User Ranking", and "About". The user profile "eraser001" with 77 points is visible in the top right.

Lasercutter Setting for 3mm Acrylics

Answers
1
Relevance
0

I work in the FabLab Aachen and would like to lasercut acrylics.
What are the ideal settings? Are they written down somewhere?

Solved ✓
eraser001
★★77 pts
posted: 2013-03-26 18:11:44

Relevance
4

Hello,
the settings are all on this homepage [here](#) everything necessary is written down! The acrylic is called LAseracrylic there.
Best!

Solution ✓
Ignace
★★15 pts
posted: 2013-03-26 18:38:25

[Write Answer](#)

©FabFAQ 2012/2013 [Impressum](#)

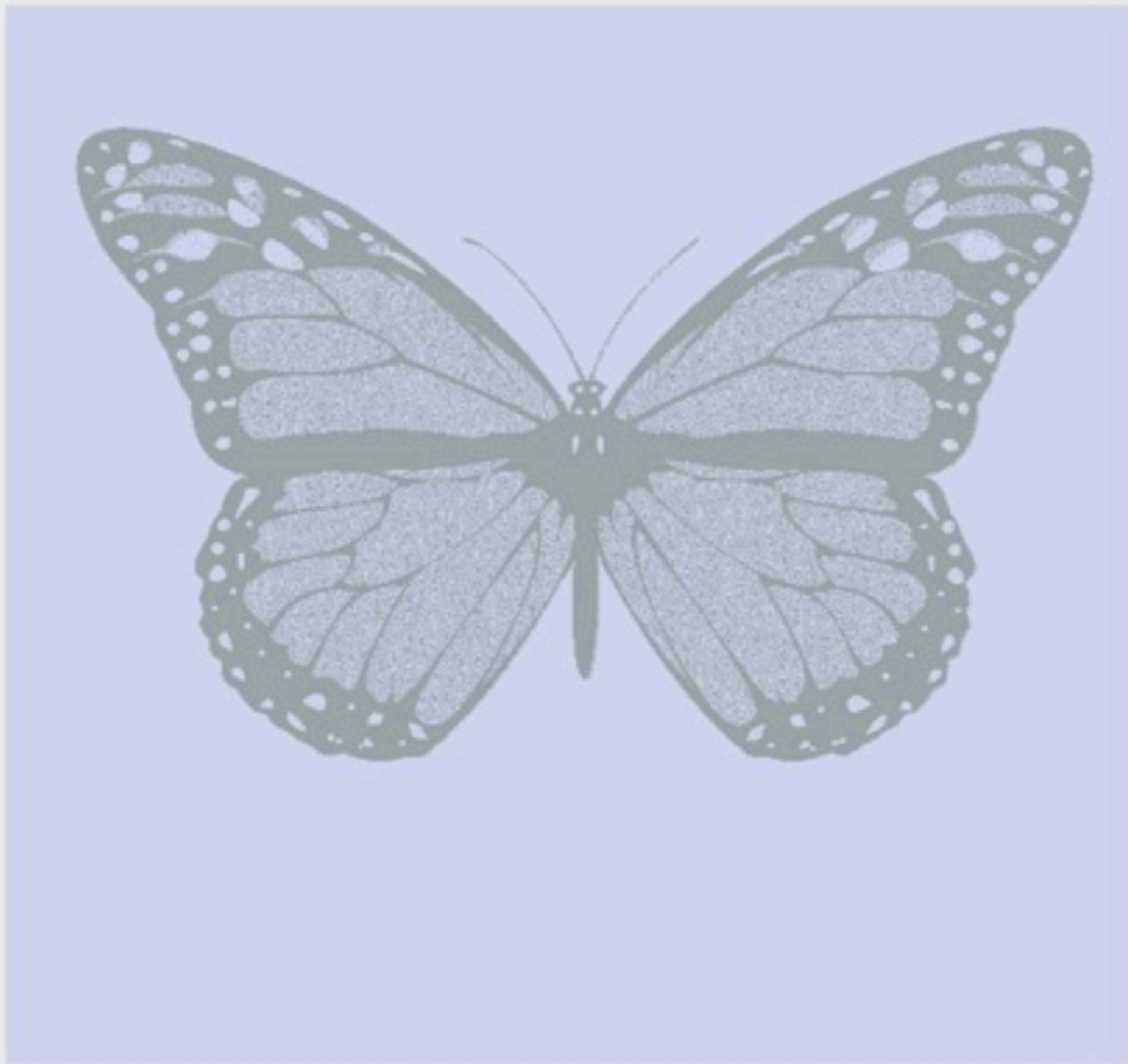
Full Preview

Cutting Preview

Zoom: 517

Capture Foto

Preview



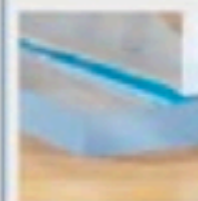
Laser Cutter



Epilog ZING @
Fablab



Material



Acrylic Glass



Total Height

3.0 mm

Dimensions

600 x 300 mm

Mapping

Engrave



Custom

Estimated Time:

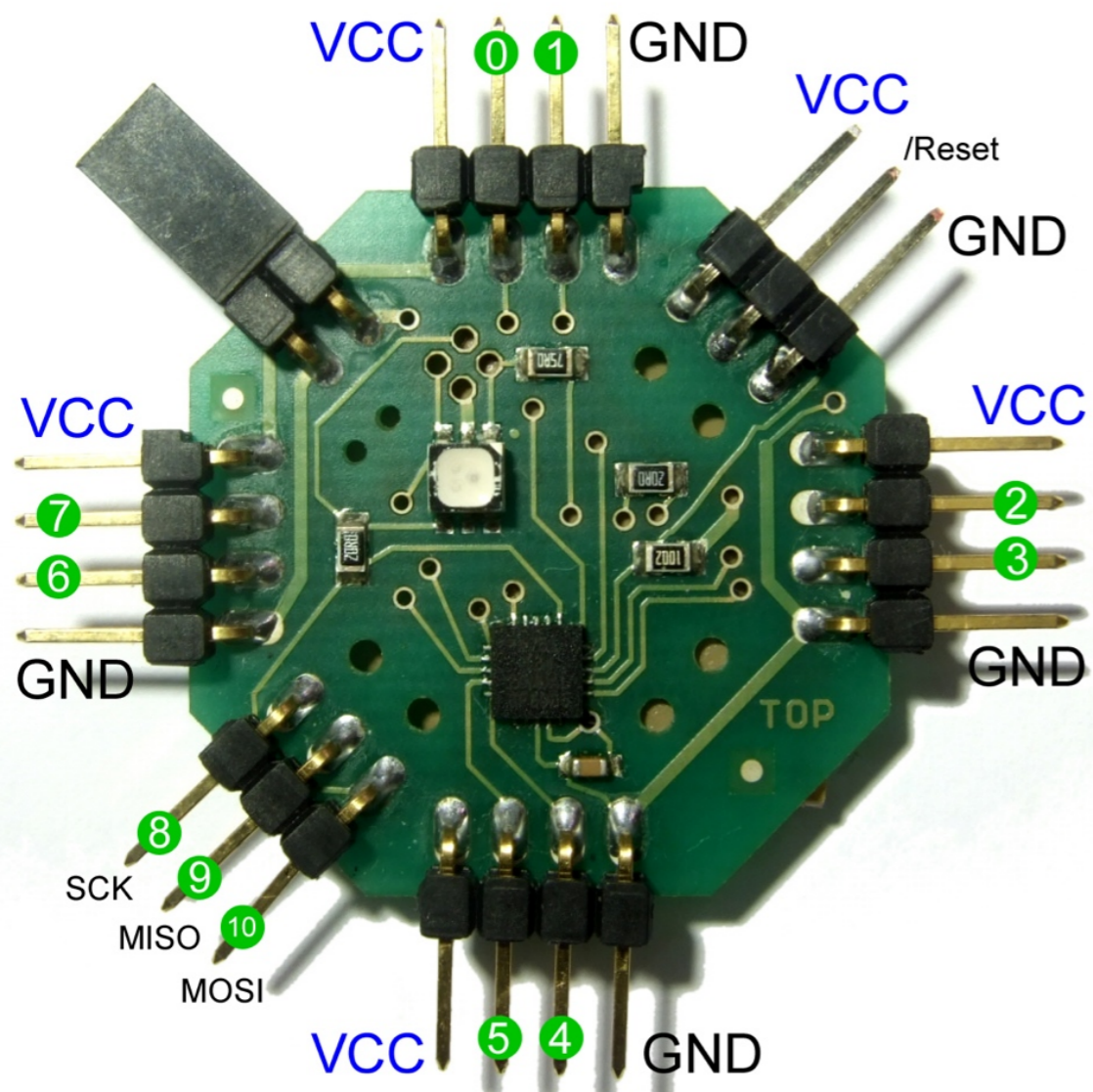
00:08:10

Calculate

Execute

Sketching 2009: luminet.cc

Programming By Infection



Luminet 2



LumiNet 2



- ✦ Personal Design: 3rd Digital Revolution
- ✦ Requires new UIs encoding domain knowledge
- ✦ Continuum: Download—Parameterize/Constrain—CAD
- ✦ Orthogonal to (Personal or Mass) Fabrication
- ✦ Open Source Hardware
- ✦ Examples: FabScan, Framer, VisiCut
- ✦ FabLabCon 2013 • Sep 9 • Aachen

personaldesign.cc

Cassius Lamp
(AEC '09)

