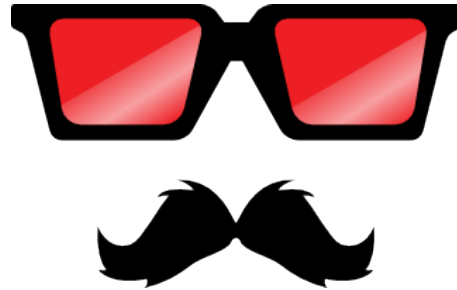


# Mr Beam goes Kickstarter



Lessons learned from crowdfunding a  
hardware project

# Who we are



*Mr Beam*

- ▷ Teja and Philipp
  - ▷ software developers!
  - ▷ no idea about hardware
  - ▷ no idea about crowdfunding
  - ▷ no idea about finances
  - ▷ no idea about marketing
- > let's do a hardware project!

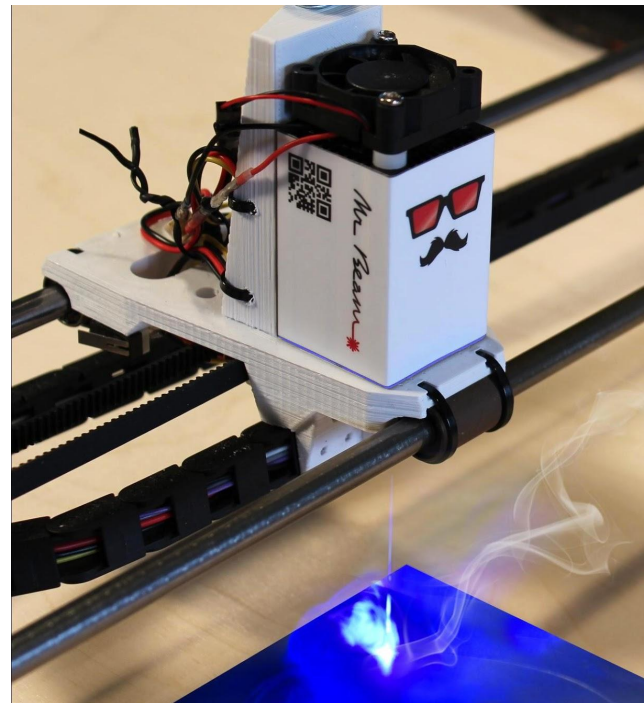


# What we did this summer



*Mr Beam*

- ▷ DIY laser cutter & engraver kit
- ▷ crowdfunded via Kickstarter
- ▷ 3D printable
- ▷ 1W, 445nm laser (class 4)
- ▷ open hardware & software (coming soon :)



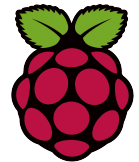
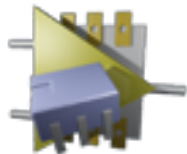
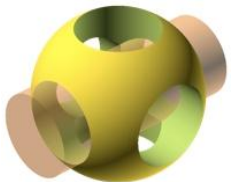
# All done with OSS



Mr Beam

- ▷ Engineering: OpenSCAD
- ▷ Arduino Shield Design: KiCAD
- ▷ Graphics / Logo: Inkscape
- ▷ Software: based on grbl, OctoPrint
- ▷ Hardware: Arduino + Raspberry Pi

*Many thanks to everybody who contributed!*



# Crowdfunding platform



Mr Beam

- ▷ no product market research
- ▷ chose the biggest one (to be safe)

**KICKSTARTER**

- ▷ Preparations:
  - permanent resident in a supported country
  - bank account
  - amazon payments account (US only)
  - limited liability company

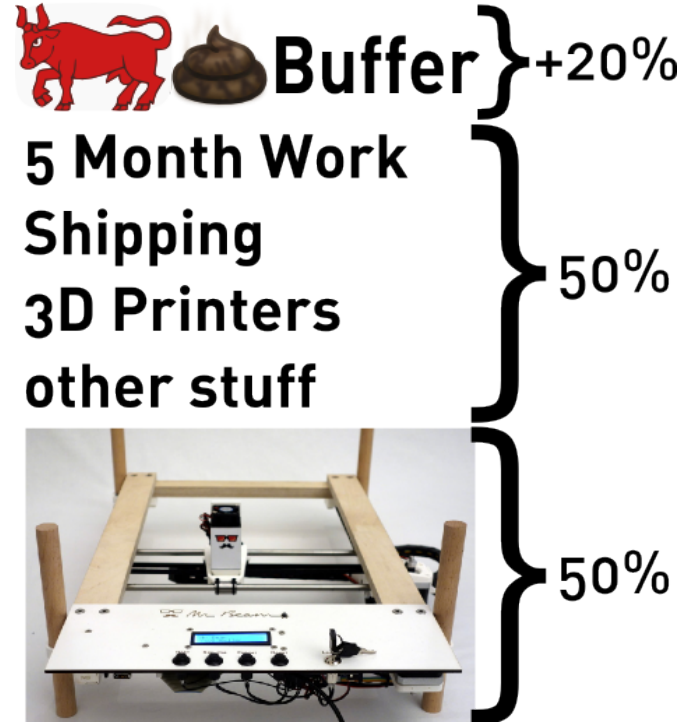


# Planning the campaign



*Mr Beam*

- ▷ Estimate the costs...
  - hardware costs (COGS)
  - labor/ research / living costs
  - don't forget: fees (10%), tax advisor, lawyer, VAT,...
- ▷ Buffer!!1! (time and money!)
- ▷ How much money to ask for?
  - Single reward price?
  - Total funding sum?

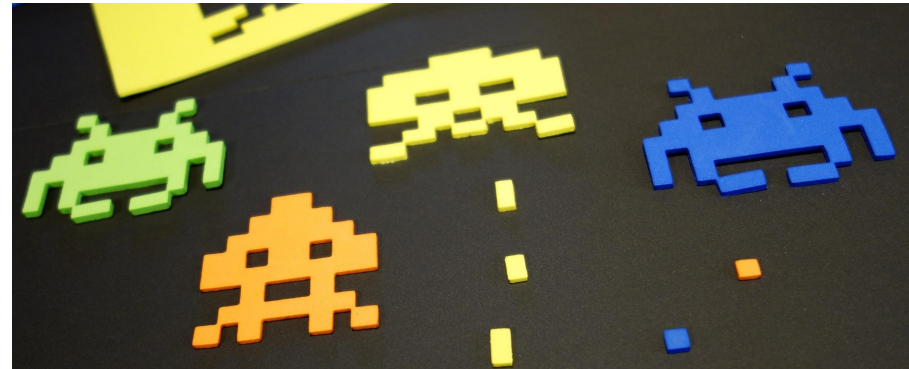


# Preparation: Video & Web



Mr Beam

- ▷ Tell a story
- ▷ Show use cases first
  - inspires creativity of the viewer
  - fun to watch
- ▷ Show your prototype
- ▷ Technical Details
  - not too much
  - towards the end



# During the campaign



Mr Beam

- ▷ long days answering emails
- ▷ no sleep
- ▷ much coffee & mate
- ▷ lots of “help offers”
- ▷ long wait for the money (3-4 weeks)





# Ordering & Production



Mr Beam

- ▷ Alibaba / AliExpress
- ▷ Ordering within a web chat
- ▷ Send pictures of your needs
- ▷ Payment: wire transfer, CC, Western Union feels risky...
- ▷ ...but works (we were lucky !)

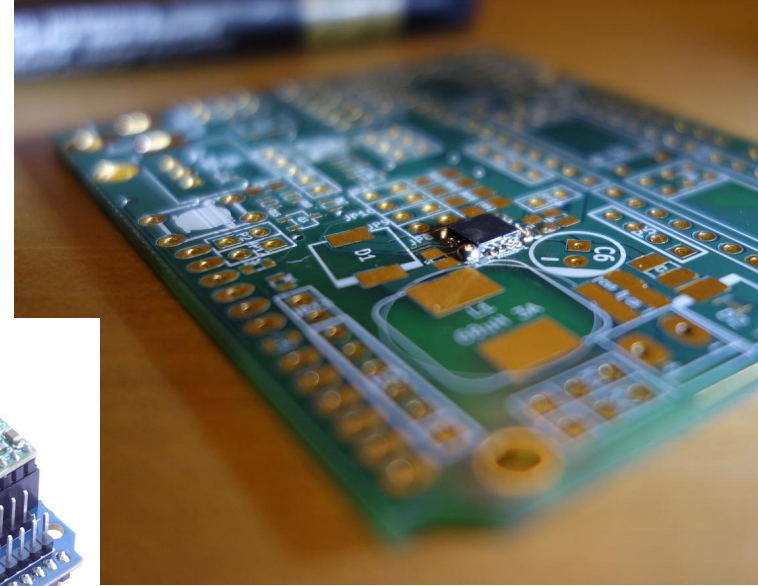
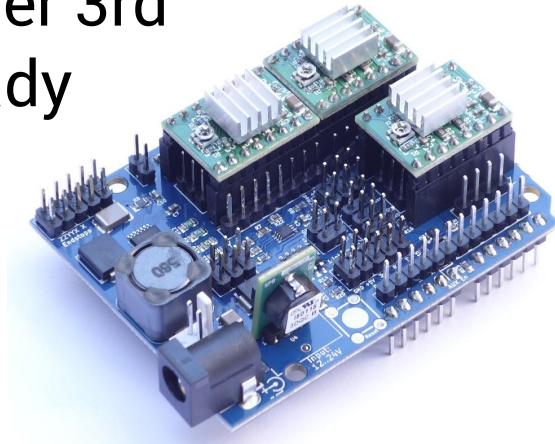


# PCB: Prototype to Production



*Mr Beam*

- ▷ 4 prototypes
- ▷ worst case happened:
  - LD driver IC was discontinued after 3rd prototype ready
- ▷ bugs are not updateable here



# Plastic Parts



Mr Beam

Too few for injection molding => 3D printing

Printrbot Simple Metal \* 4

24/7 printing

4 months

7000 parts

90+ kg filament

15% failed parts



# Production



Mr Beam

- ▷ 260 Cable trees
- ▷ 1000+ Steel rods
- ▷ 1000+ Wooden parts
- ▷ small bags like screw sets, bearing set



This stuff eats up your time!



# Unexpected delays



Mr Beam

## Underestimated duration of some tasks

- ▷ Finding good suppliers
- ▷ Out-of-stock components
- ▷ Crimping cables
- ▷ Packaging kits
- ▷ Working with wood



Fun



Mr Beam

FabCon 3D

FabCon 3.D

15. - 17. Mai 2014

Fab10



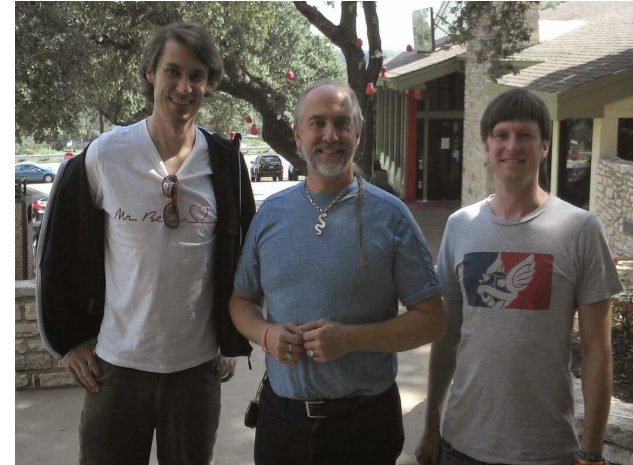
Trip to Georgia

TV show TM Wissen (Servus TV)

Maker Faire Rome



**Make:** article



# After all



*Mr Beam*

- ▷ Cost calculation is super important
- ▷ Think about scaling
- ▷ 3D printing does not scale very well
- ▷ Don't underestimate durations of manual tasks
- ▷ Think about the time after
- ▷ We did not get rich, but made it here :)



# Questions?



*Mr Beam*

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