

**The People**

[ w h o ]

**The Machine**

[ w h a t ]

**The Mission**

[ w h y ]

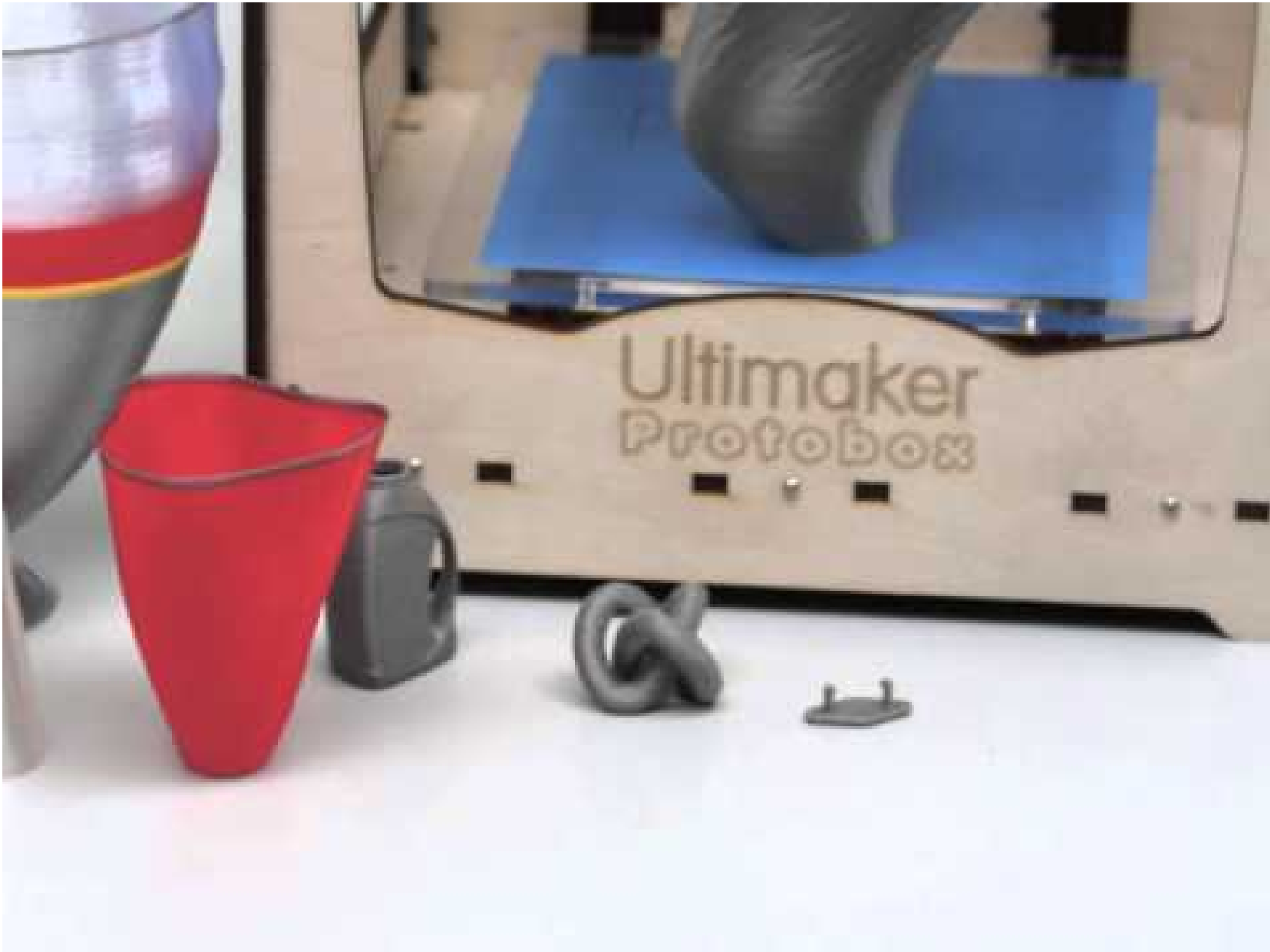


**Ultimaker**

The video for this talk is  
archived at:

[www.ustream.tv/recorded/16735613](http://www.ustream.tv/recorded/16735613)

[ apologies, the quality of the sound is not great ]



Ultimaker  
Protobox

# Episode 1: The people [ who we are ]



# Why does Ultimaker exist today?

RepRap Addiction Access to tools User innovation

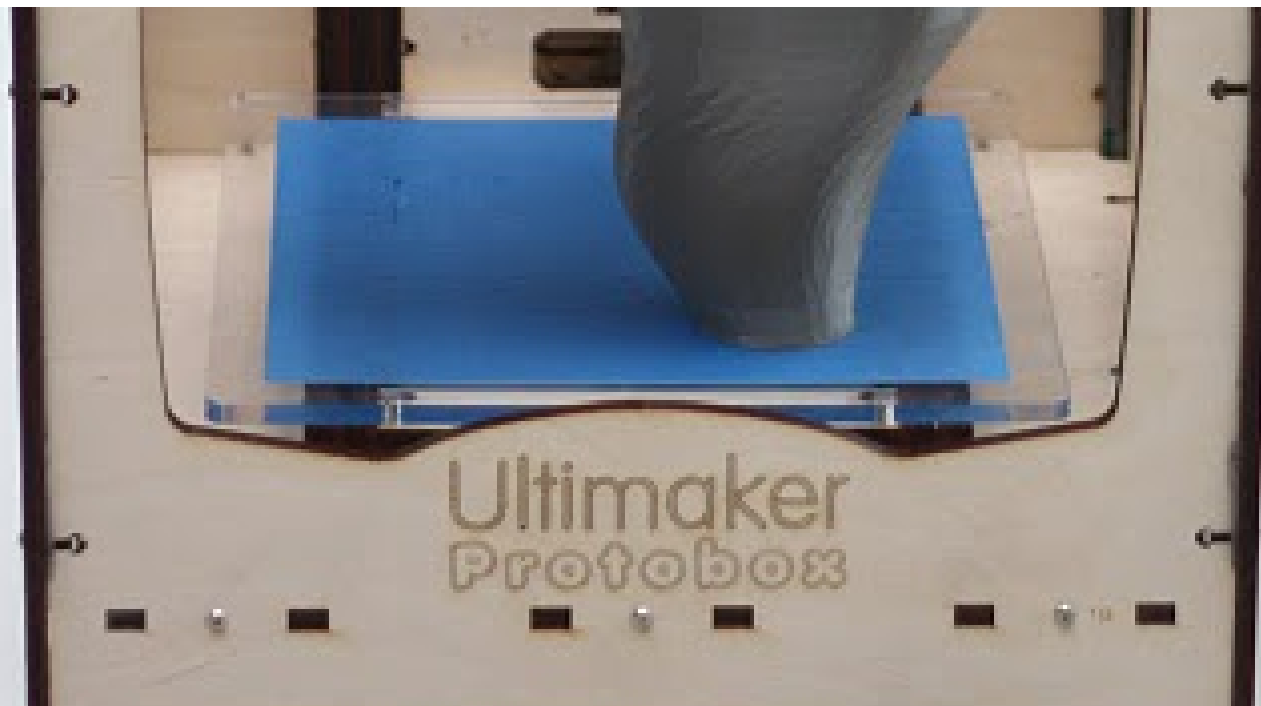
Democratize Technology Perseverance

Access to knowledge Wanting a FabLab@Home

Meeting in a FabLab Shared Excitement



## **Episode 2: Ultimaker** [ about the machine ]



# From RepRap to Ultimaker

## In 2008 (RepRap)

- Every machine is different.
- A lot of work to make the parts before it's even assembled.
- Hard to operate because of lacking quality parts.
- Large and heavy machine.
- Printing takes a long time!
- A printer for people who want to hack on printers

## Ultimate 3D printer:

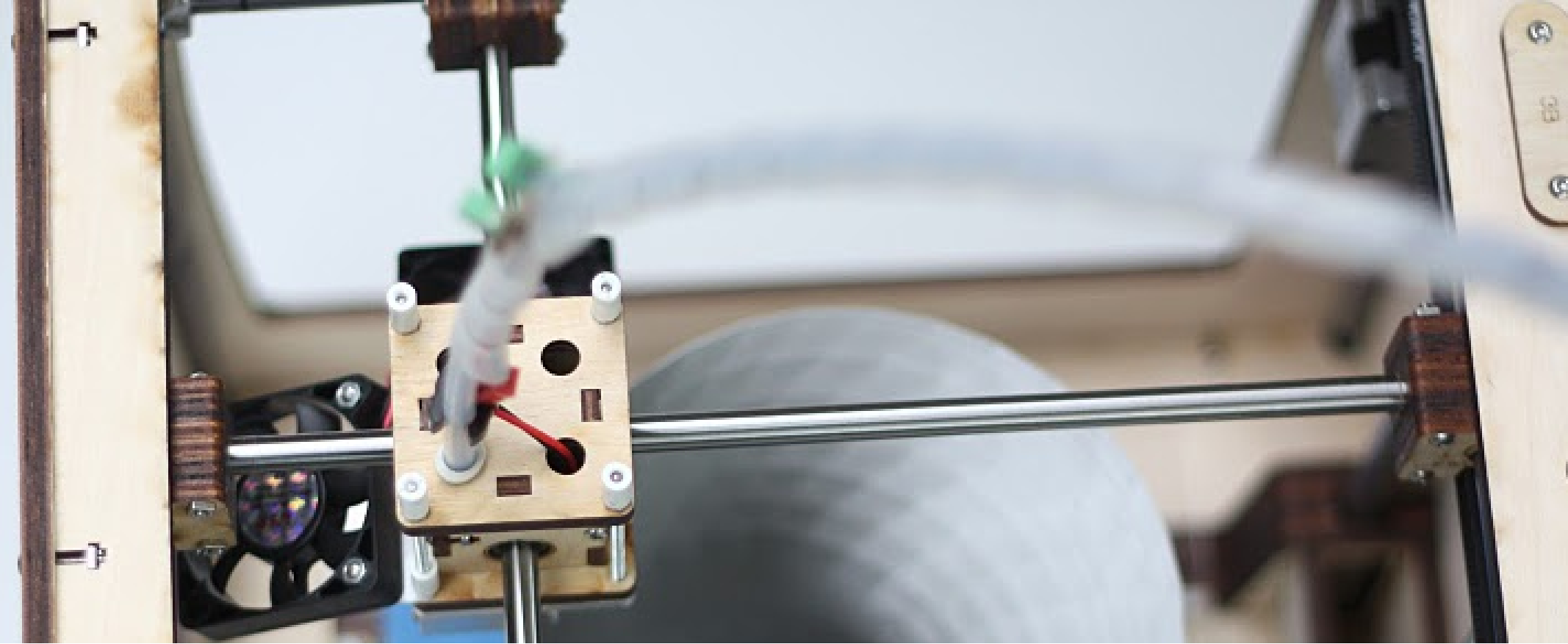
- Consistent results
- Get everything in one box. IKEA-style build and start printing.
- Easy to operate, a stable production machine.
- Small machine, large 3D prints.
- Printing much faster!
- A printer for people who want to print objects

# Large build volume

[ 21 x 21 x 22 cm ]







**Low moving mass: Parallel kinematics**  
[ Fab-in-a-Box inspired, taking it further]



# Main tool

[ ikea-style assembly ]

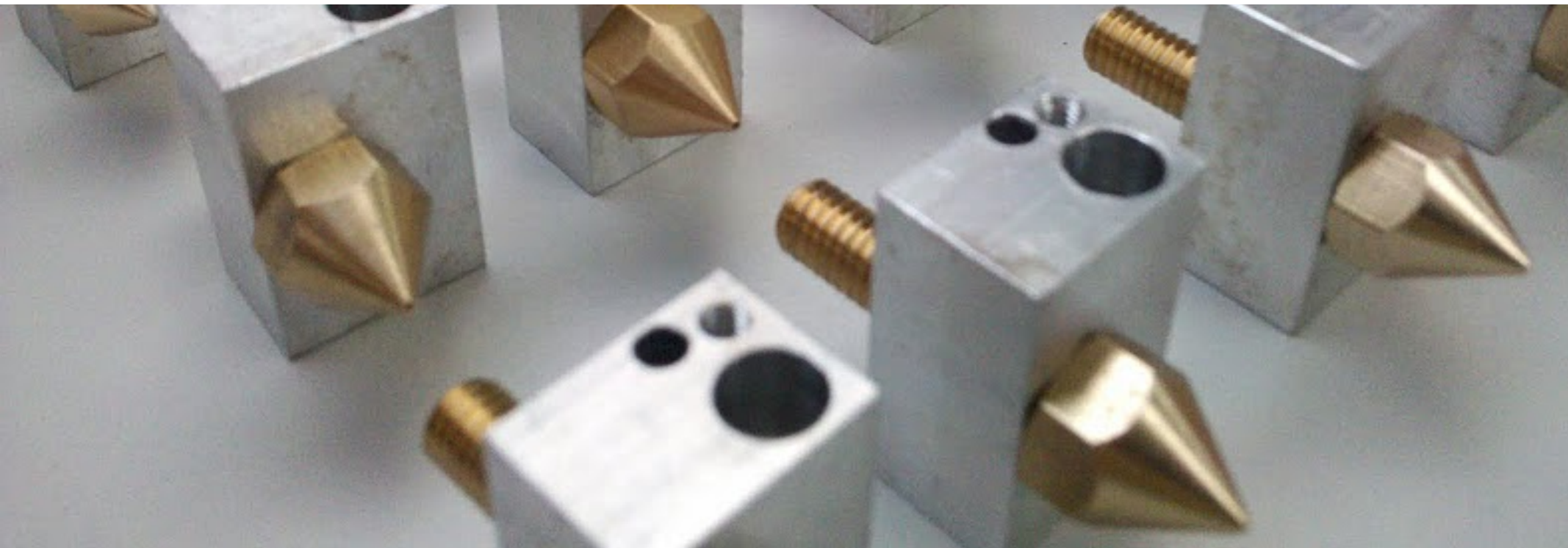


# **Episode 3: The Mission**

**Episode 3:**  
**[ the mission ]**



# Consistency & Scalability

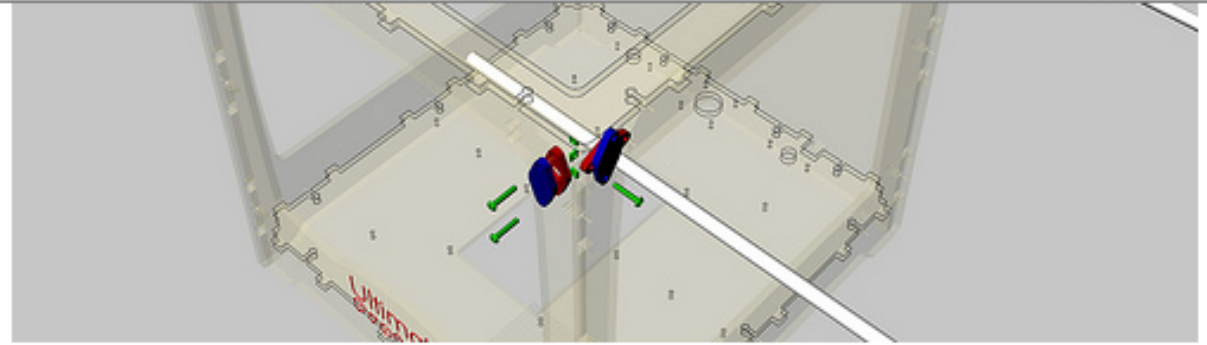


# Replicability

## [ knowledge transfer ]

- Offline:  
Three workshops!
- Online Manual  
(wiki)

[wiki.ultimaker.com/Ultimaker\\_rev.2\\_assembly:\\_X-Y\\_axes](https://wiki.ultimaker.com/Ultimaker_rev.2_assembly:_X-Y_axes)



Note that the closed caps should not cover the hole on the RIGHT and BACK side of the m... the corner which will be hard to reach afterwards, but don't bolt the other side, because you... above the stepper motors.



**USE ORDINARY HEX NUTS not the square nuts which may currently**

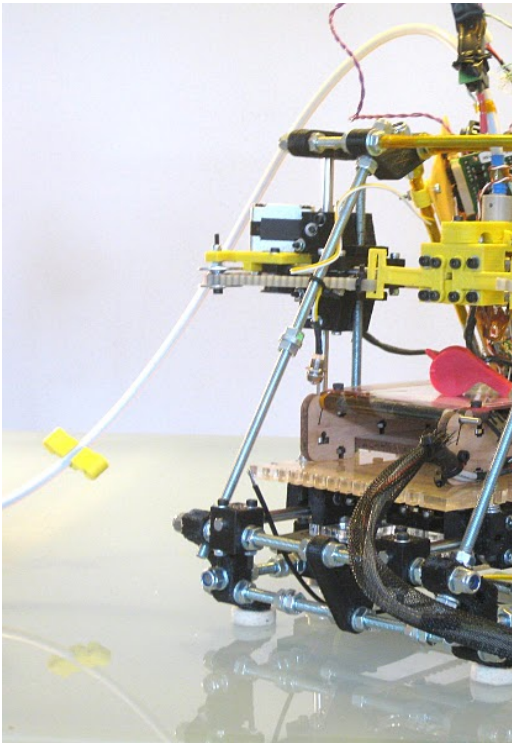
Take 2 closed caps and 2 caps with a hole in them. Place the closed caps on the outside... of the frame and tighten both of them with 2 normal nuts. Guide the red wires as in the pict...



**Epilogue:**  
**[ the results ]**

# Not *just* for hackers...

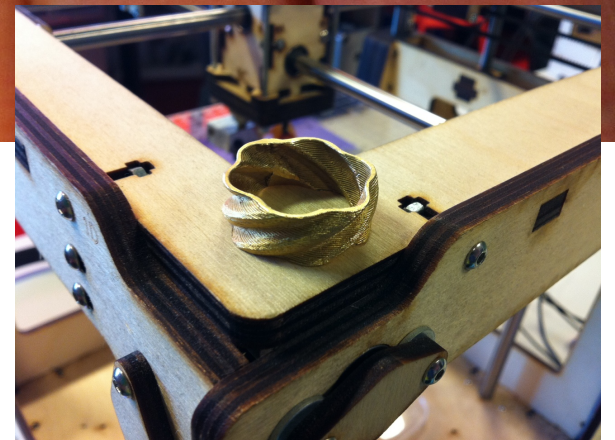
First: About the machine  
Then: About the output



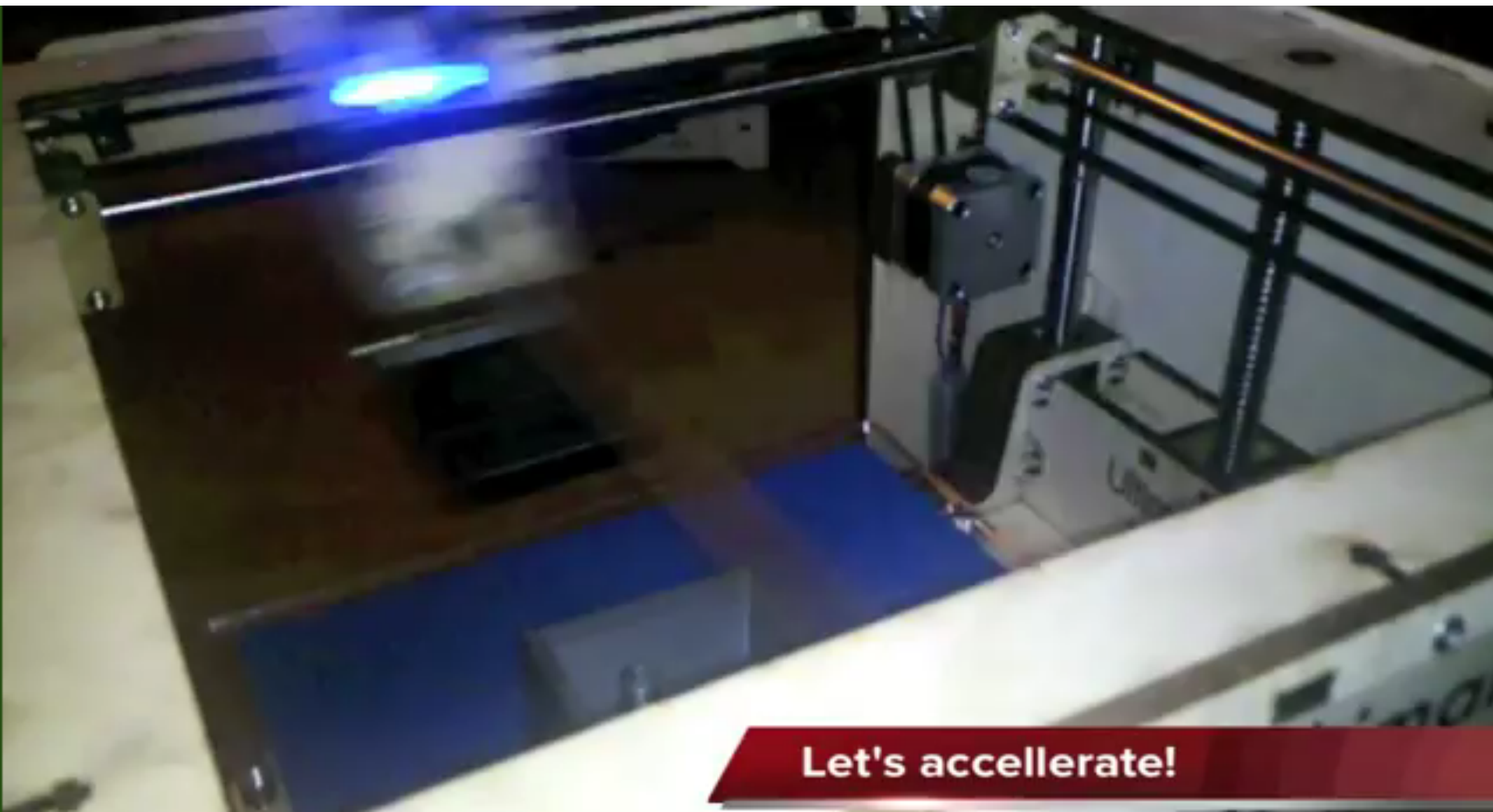


# Enabling People

Gold casting



# Higher speeds by Bernhard Kubicek [ MetaLab ]

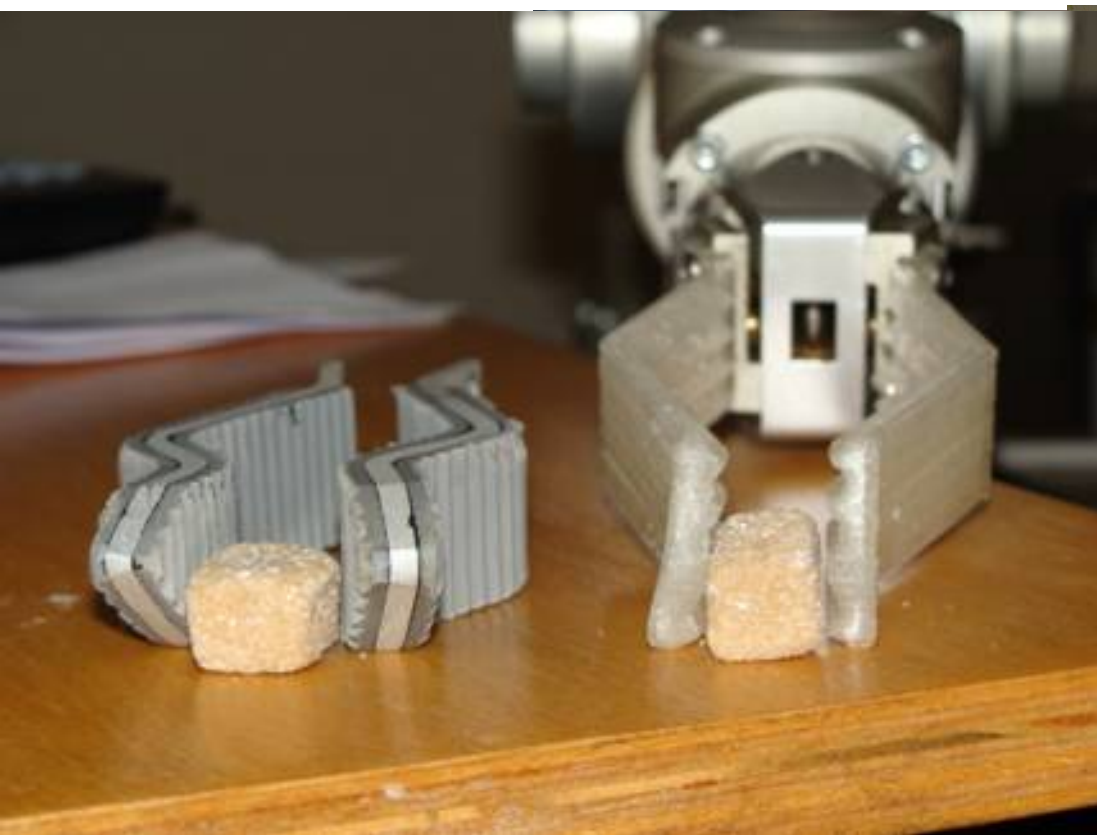


Let's accelerate!

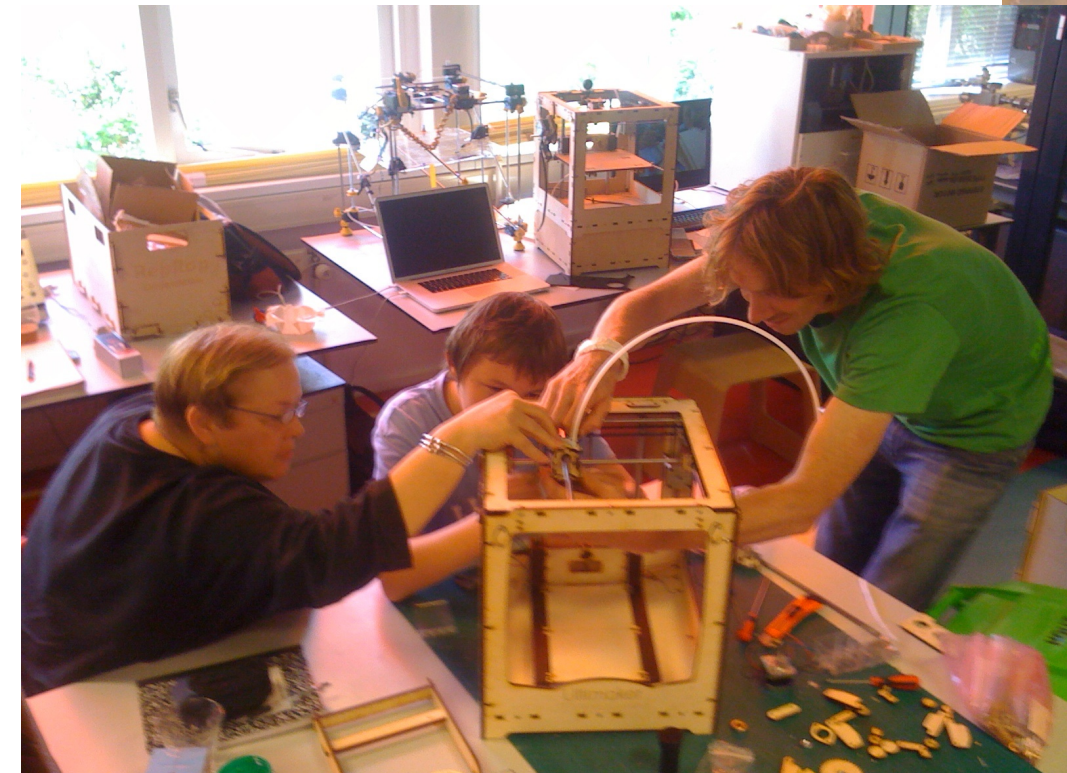
**Design: € 1,- per minute**



# An enabled mind in a disabled body!

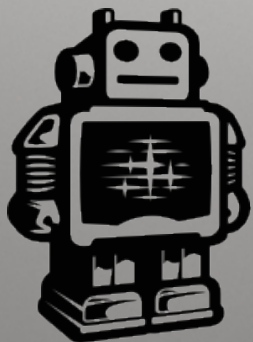


# Enabling people





**May the force be with you...**



Ultimaker