# An Introduction to hackCNC

or -

hackCNC, a gateway drug for makers

or -

"What the hell is that whining noise?" - spouses everywhere

Presented by John Spencer - Linux Conf Australia - Canberra 2013

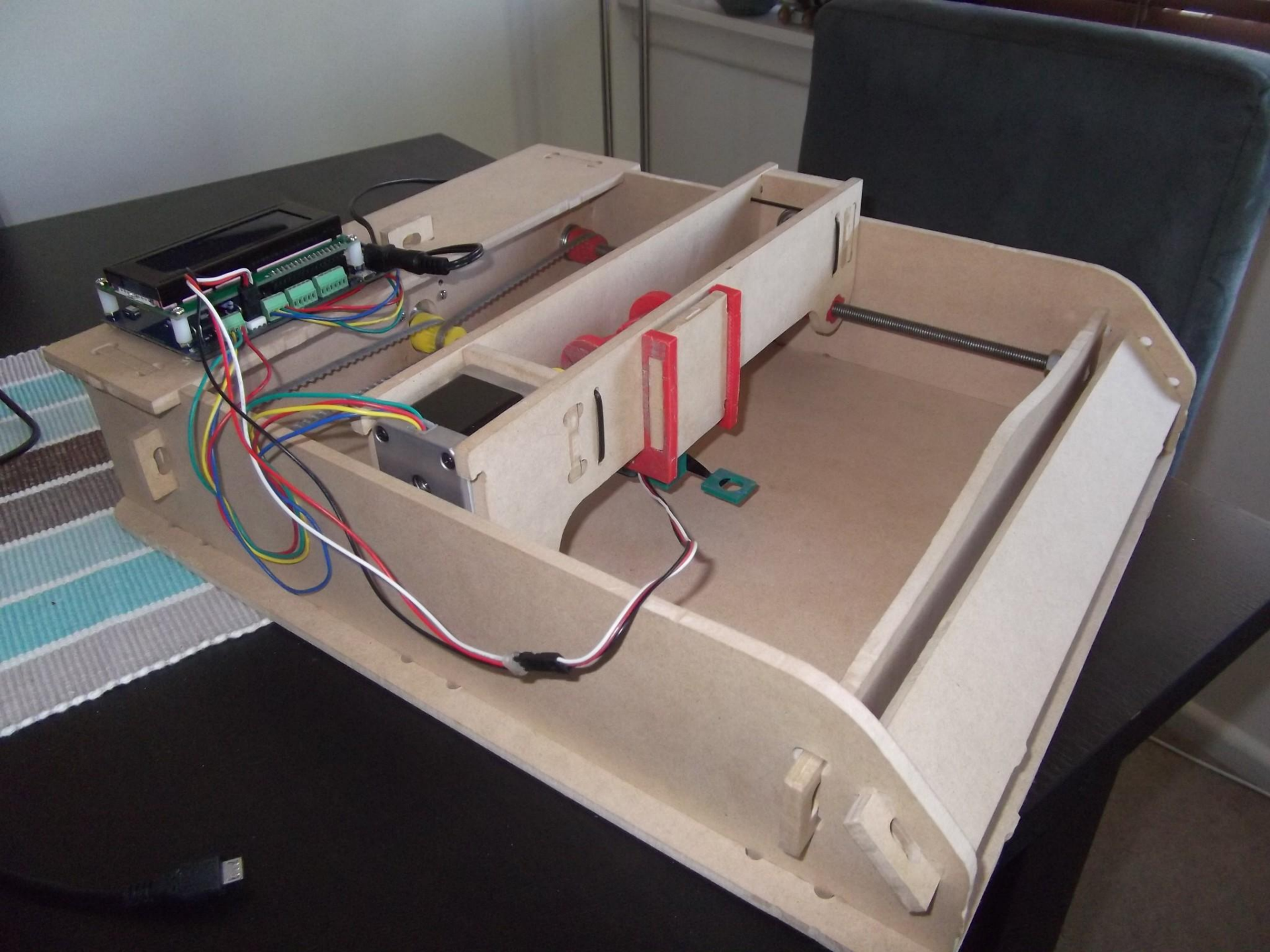
# What is hackCNC

hackCNC is a low cost, open source, two axis plotter.

It is desktop sized.

It is controlled by an Arduino processor and LinuxCNC.

It is cheap.  This is important.



# Why design/build something like hackCNC?

To get people interested in CNC.

To have something fun for groups like this one to build.

To give schools or special interest groups a nice easy project to work on.

# Limitations

Only 2 axis.
Threaded rods are a rough.
Slow.
Noisy.
Small build area.
Only 50mm of vertical space.
3D parts take ~3.5 hours to make.

# How it was made - Frame

Designed on a completely not Open Source piece of software, let's call it Screw-up.

gCode generated on a different, also completely not Open Source piece of software, let's call that ... CAM-thingy.

Cut on my sort of Open Source home built CNC Router, running the totally FOSS linuxCNC.org!

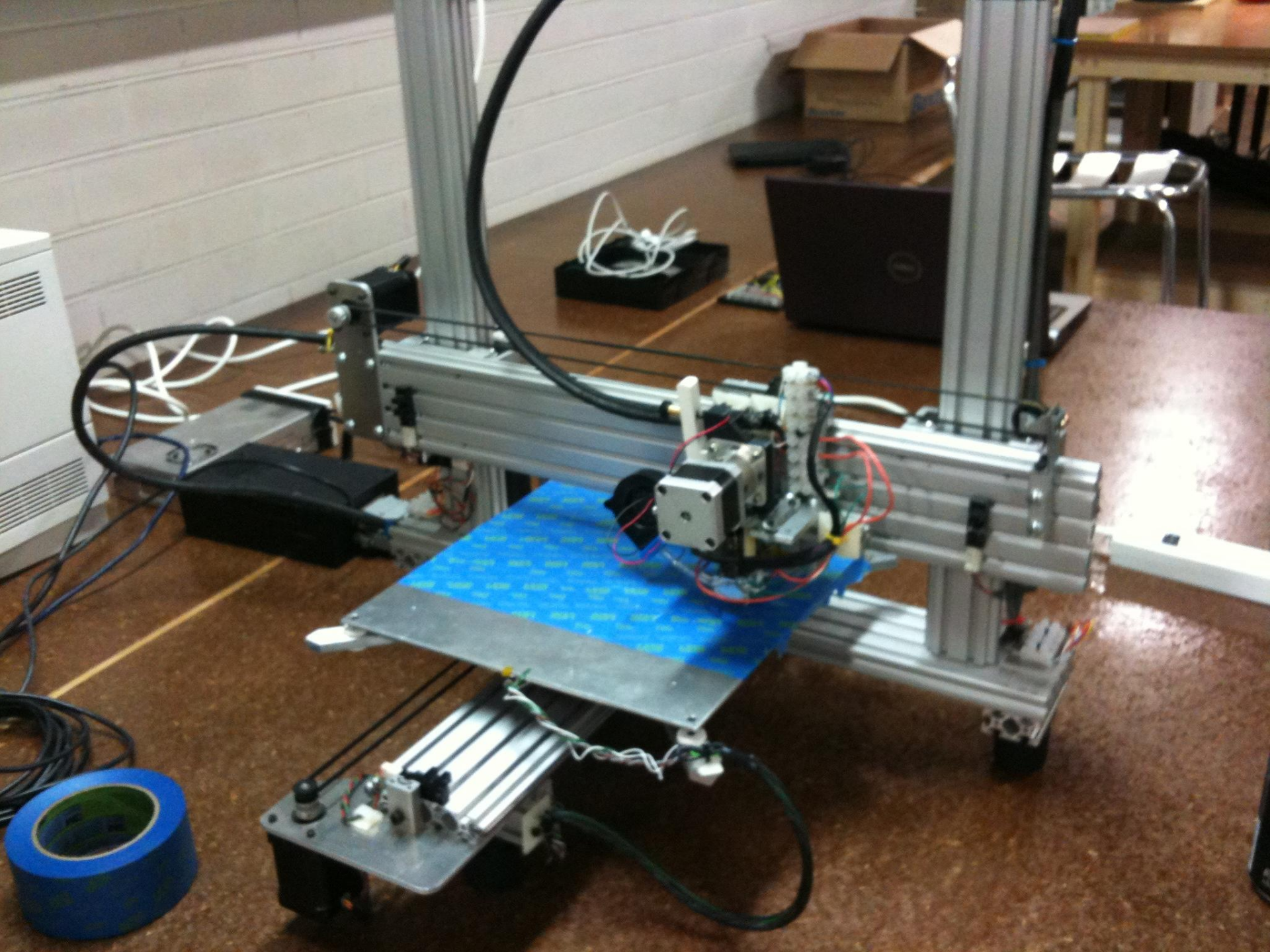

3M

# How it was made - Plastic

Also designed using Screw-up.

Cut into gCode using either slic3r.org or Cura.

Generously printed by members of the Melbourne Hackerspace.  Mainly using Prusa 3D printers because they have a large enough build platform.



# How it was made - Electronics/CNCPlot

Custom board designed by Luke Weston around the Arduino 32u4 (Leonardo) chip.

I'll let him talk about that.


hackCNC
Startup Complete.
Waiting For LinuxCNC

# How it was made - all the other bits

Sourced by other Melbourne Hackerspace members, mostly from China and the US.

## **Software - How to make it do something.**

Draw your plan in your favourite drawing program and load it into Inkscape.

Use the Export gCode tool.  A negative Z axis movement of -0.8 works best.

Load your file in LinuxCNC.

# Great, NOW what do I do with it?

Just a few ideas I've heard :)

Frikken Laser Beams!!! (Sharks sold separately)
Rotary Engraver.
Drag Cutter.
Two Colours.
Proper 3-axis (there is a breakout board)
PCB engraving.
Simple 3D touch mapping.
Replace the threaded rod with belts and rails.
-- and, of course, you can re-use the electronics...

# Contributors.....so far.....

A big thank you to everyone who helped make this project possible.  Here are most of the people who made this happen (I know I've missed some people....)

Freetronics/Jon Oxer
John Bosua
John Spencer
Luke Weston
Rob Brittain
Michael Sullivan
Andy Gelme
Bob Powers
Stuart Young
Angus Gratton
Don Douwsma
Ken Ihara
Josh Mesilane
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George Patterson