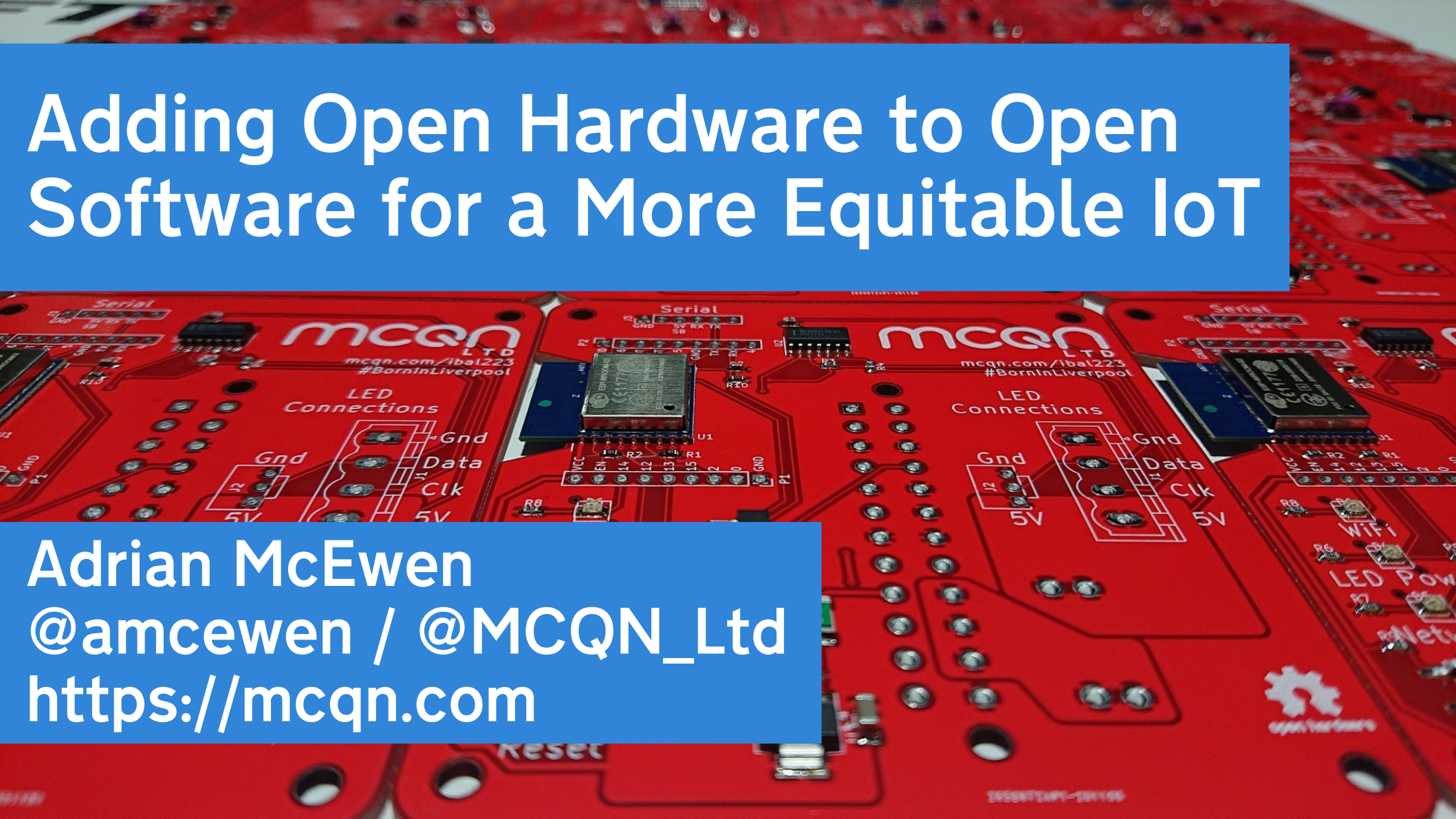
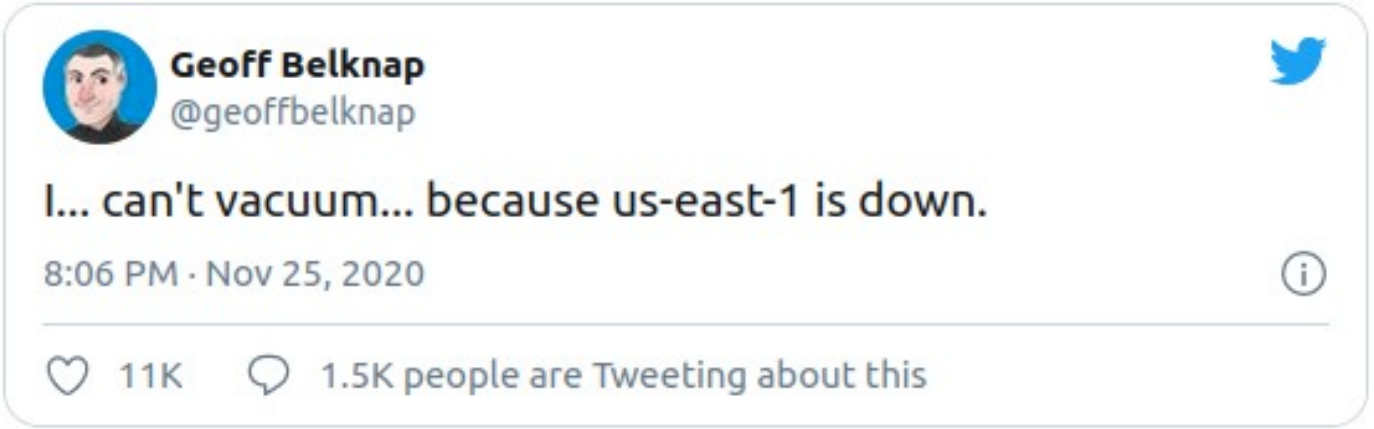
Adding Open Hardware to Open Software for a More Equitable IoT



Adrian McEwen
@amcewen / @MCQN_Ltd
https://mcqn.com

1. What's wrong with IoT?
2. How can Open Hardware and Open Software help?
3. My journey so far
4. The future...

Reliance on Distant Servers



Surveillance Capitalism

At the Whim of Tech Co's

GOOGLE | SMART HOME | TECH

86

Nest is permanently disabling the Revolv smart home hub

Starting May 15th, the Revolv hub and app won't work

By Nick Statt | @nickstatt | Apr 4, 2016, 3:40pm EDT

Via Arlo Gilbert (Medium) and Business Insider | Source Revolv

Listen to this article

SHARE

AD

Ethics/Sustainability

1 contributor

Materials Energy Toxicity Matrix

Designing out waste matrix template.

Thanks to ThingsCon 2018 and @mrchrisadams excellent talk on Reducing Carbon In the Digital Realm at Festival of Maintenance

ThingsCon 2018 Designing out Waste Based on the MET Matrix from TU Delft Design Guide	Extraction of Raw Materials	Design & Production	Packaging & Distribution	Use & Maintenance	End of life Disposal
Materials Material as an input mined, grown, harvested)	*What are the materials used?*	*What processes are used to make it?*	*What kind of packaging is used for the item and in transit?*	*What consumables are used by the product? What is needed to keep it working?*	Which bits can be recycled? Are their local recirculation schemes for them?
Energy Energy used	*How much energy is used to get the materials you use?*	*How much energy does the*	*How easy is it to transport? How*	*How much power does it use? How much energy is used*	*How much energy is used to treat the*

1. What's wrong with IoT?
2. How can Open Hardware and Open Software help?
3. My journey so far
4. The future...

Data and UI On Device

Color palette

Default

Effect speed

Effect intensity

Effect mode

Solid
Android
Blink
Blink Rainbow
Bouncing Balls
Bpm
Breathe
Candle
Candle Multi
Chase
Chase Flash
Chase Flash Rnd

Segment 0

+ Add segment

Brightness

Load from slot

1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16

Saving mode

Slot 16 can save all segments.

Preset cycle

First preset: 1

Last preset: 5

Time per preset: 1.2 s

Transition: 0.7 s

Open Standards

DMX start address: 1

DMX mode: Multi RGB

E1.31 info

Timeout: 2500 ms

Force max brightness:

Disable realtime gamma correction:

Realtime LED offset: 0

Alexa Voice Assistant

Emulate Alexa device:

Alexa invocation name: Light

Blynk

Blynk, MQTT and Hue sync all connect to external hosts!

This may impact the responsiveness of the ESP8266.

For best results, only use one of these services at a time.

(alternatively, connect a second ESP to them and use the UDP sync)

Device Auth token:

Clear the token field to disable. Setup info

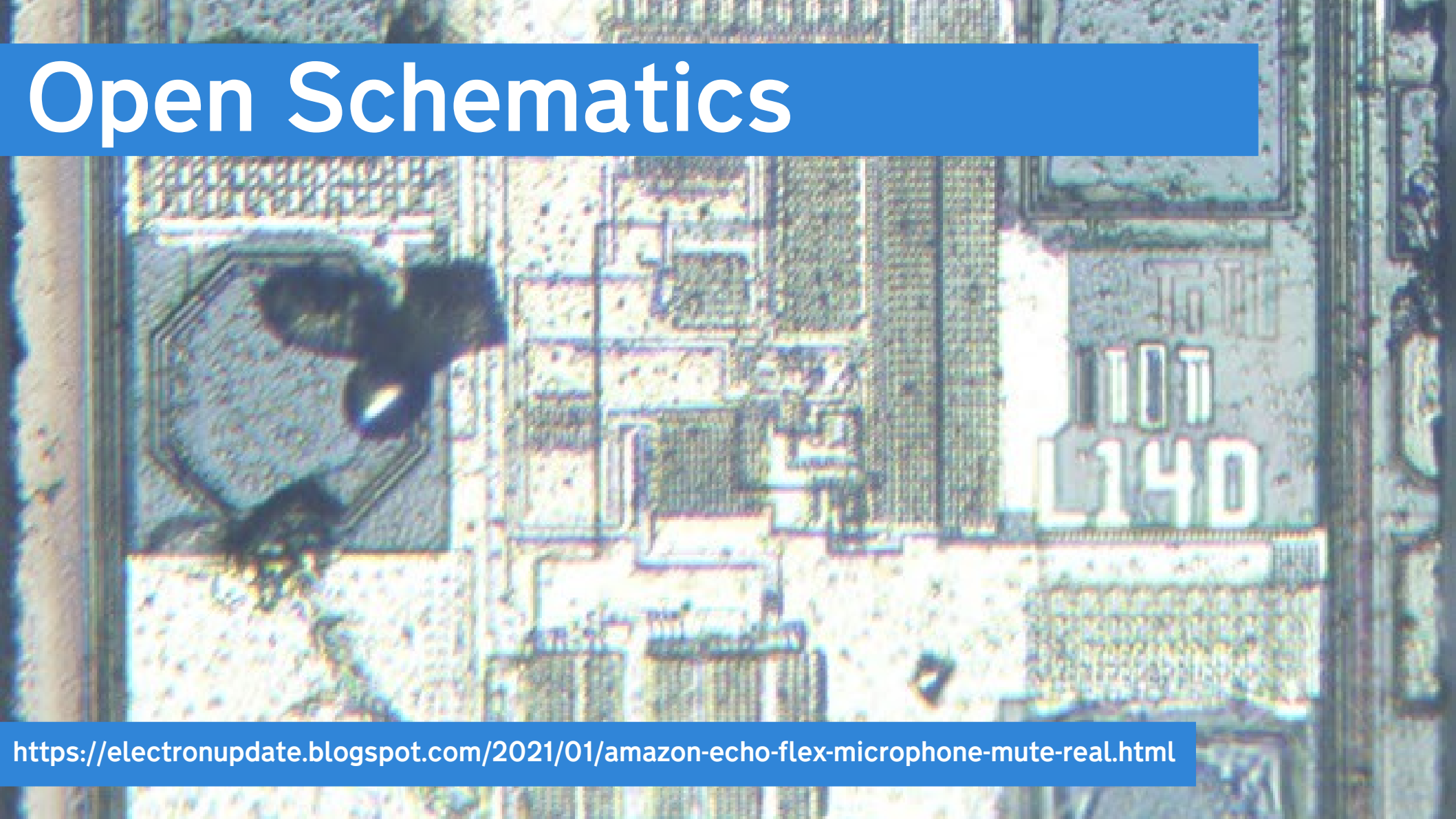
MQTT

Enable MQTT:

Broker: broker.mqtt-dashboard.com Port: 1883

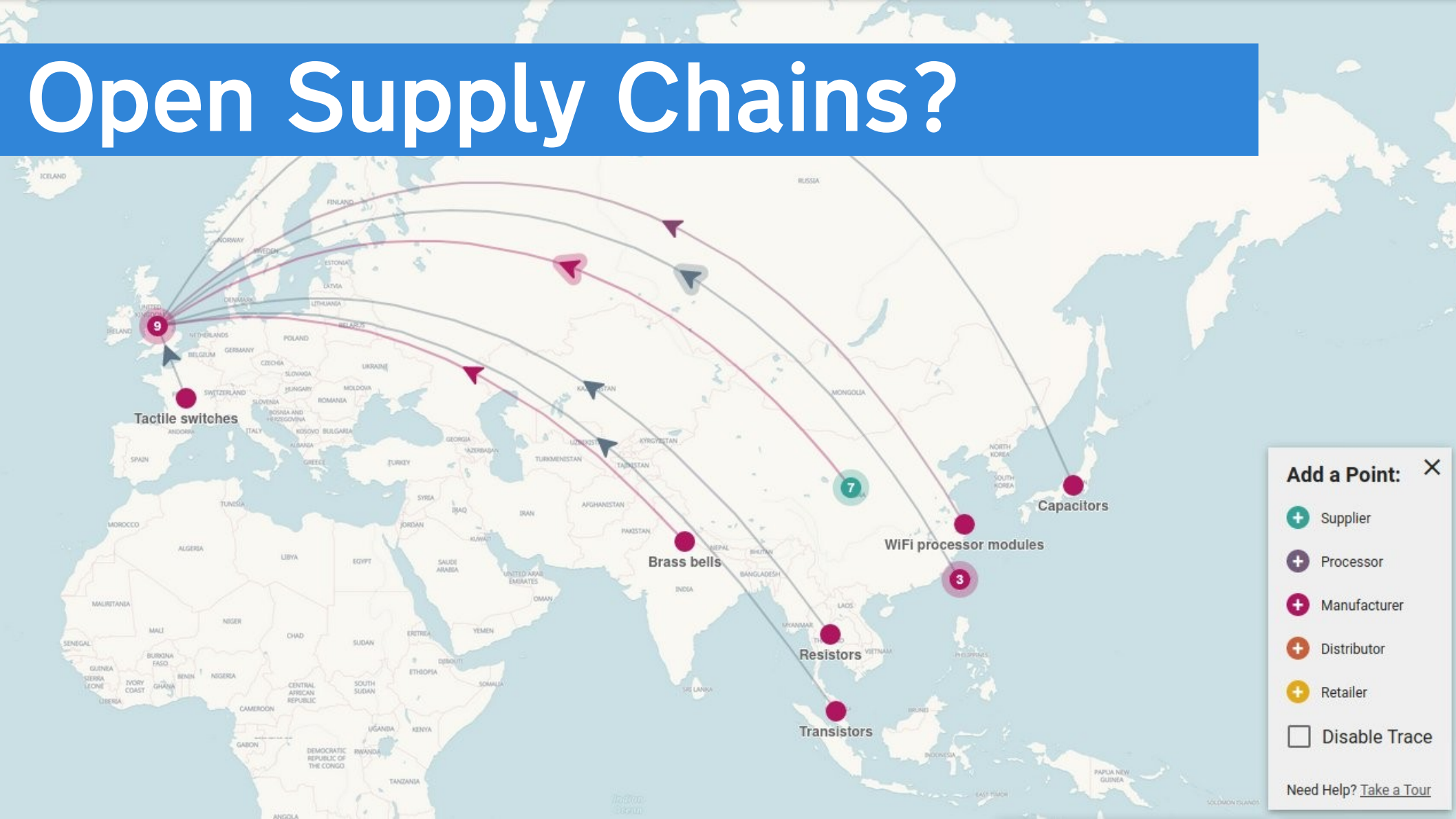
The MQTT credentials are sent over an unsecured connection.

Open Schematics



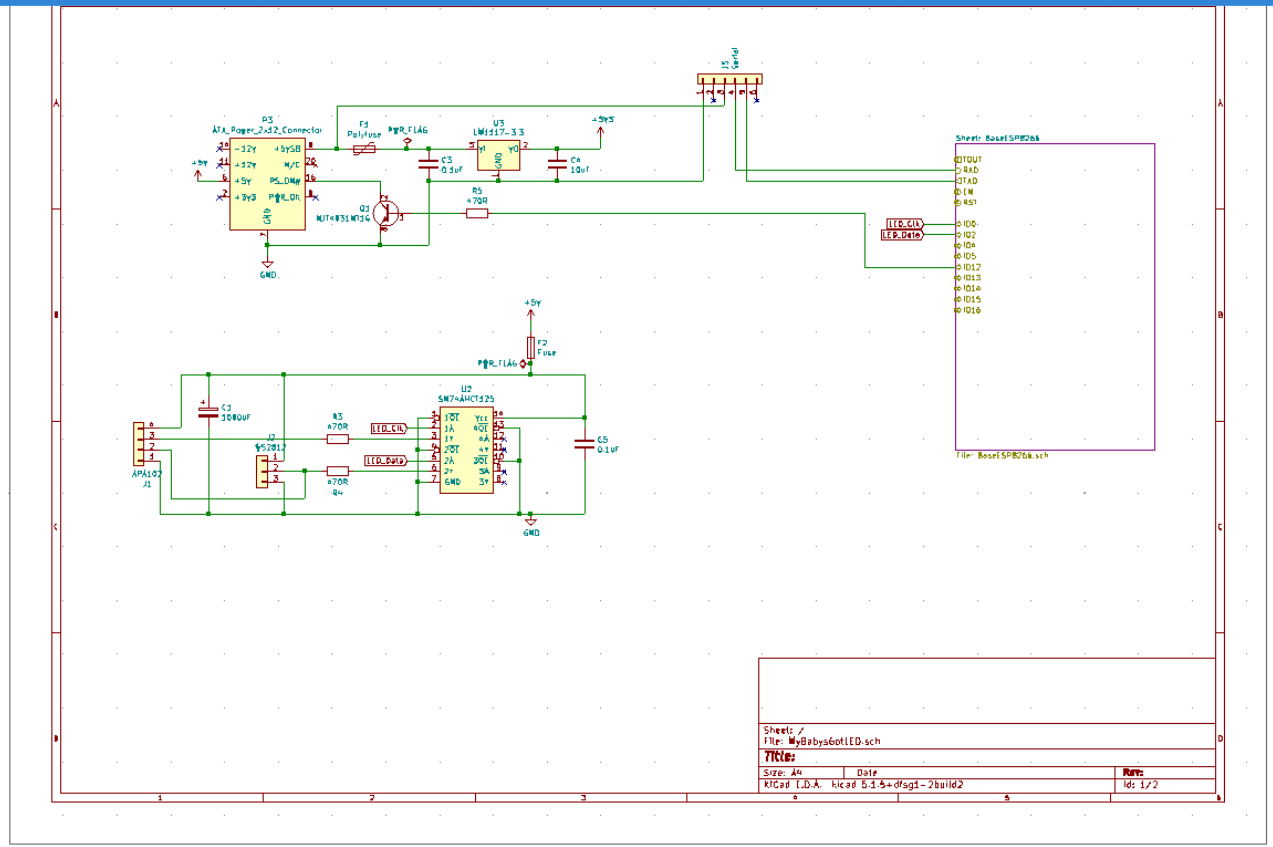
https://electronupdate.blogspot.com/2021/01/amazon-echo-flex-microphone-mute-real.html

Open Supply Chains?



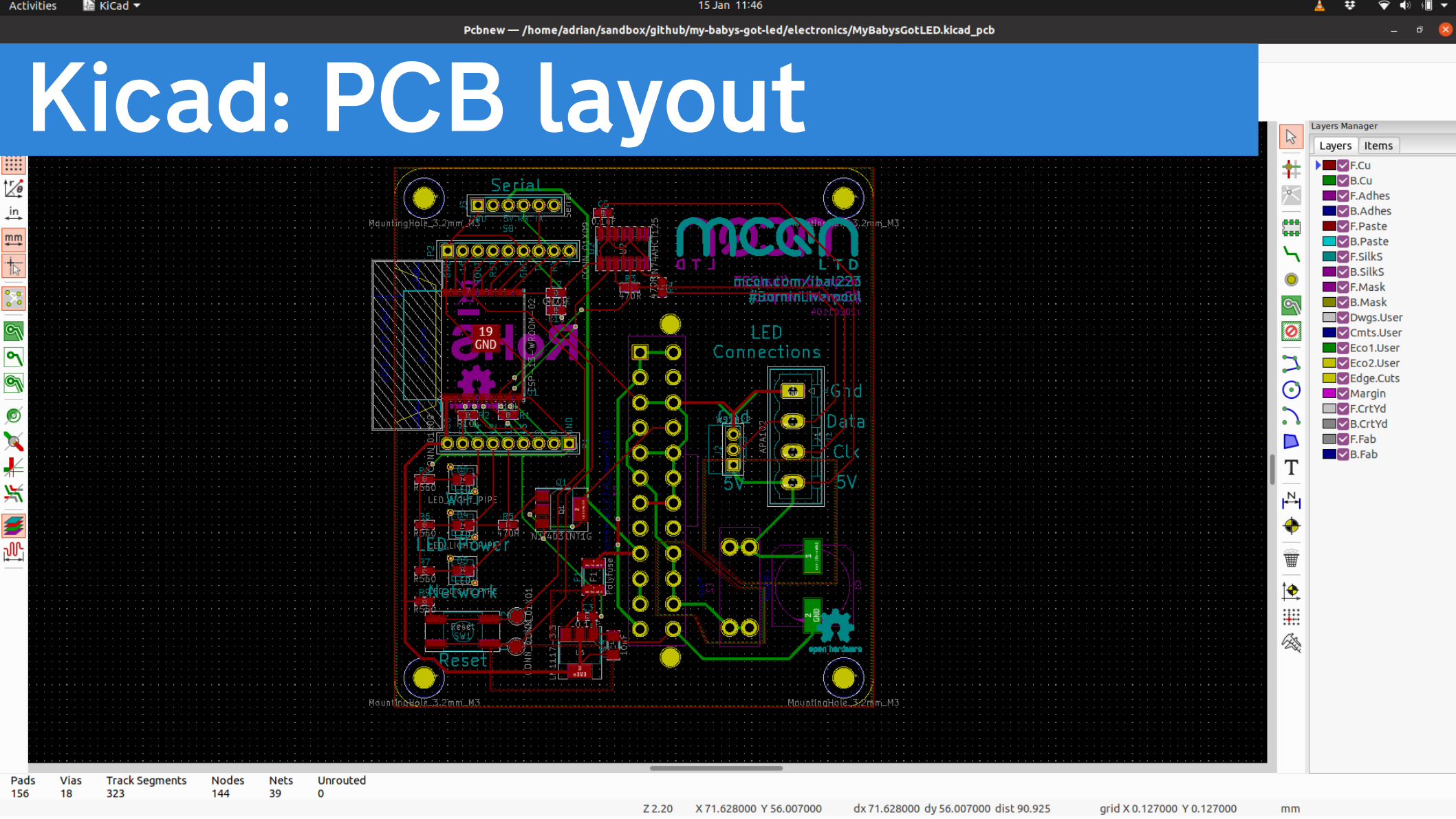
1. What's wrong with IoT?
2. How can Open Hardware and Open Software help?
3. My journey so far
4. The future...

Kicad: Schematic



Z 1.07 X 30.50 Y 55.90 dx 30.50 dy 55.90 dist 63.68 grid 1.2700 mm

Kicad: PCB layout



PCB Manufacturing

* OSHPark – https://oshpark.com/
* JLCPCB – https://jlcpcb.com
* European Circuits – https://european-circuits.co.uk
* Many more...

Toward Utopia for the Many

The future I *want* embodies different values.

I want my home to be voice controlled – but I want it without centralised data capture.

I want car-sharing schemes and last mile delivery – but I want it to operate through mutualism and co-operatives.

I want home security drones – but I want them to make their domestic visual index available to a private app so I can text-search my bookshelves for that book I can't lay my hands on, rather than them using it to train their ad targeting A.I.

Privacy. Agency. Mutualism. Equality.

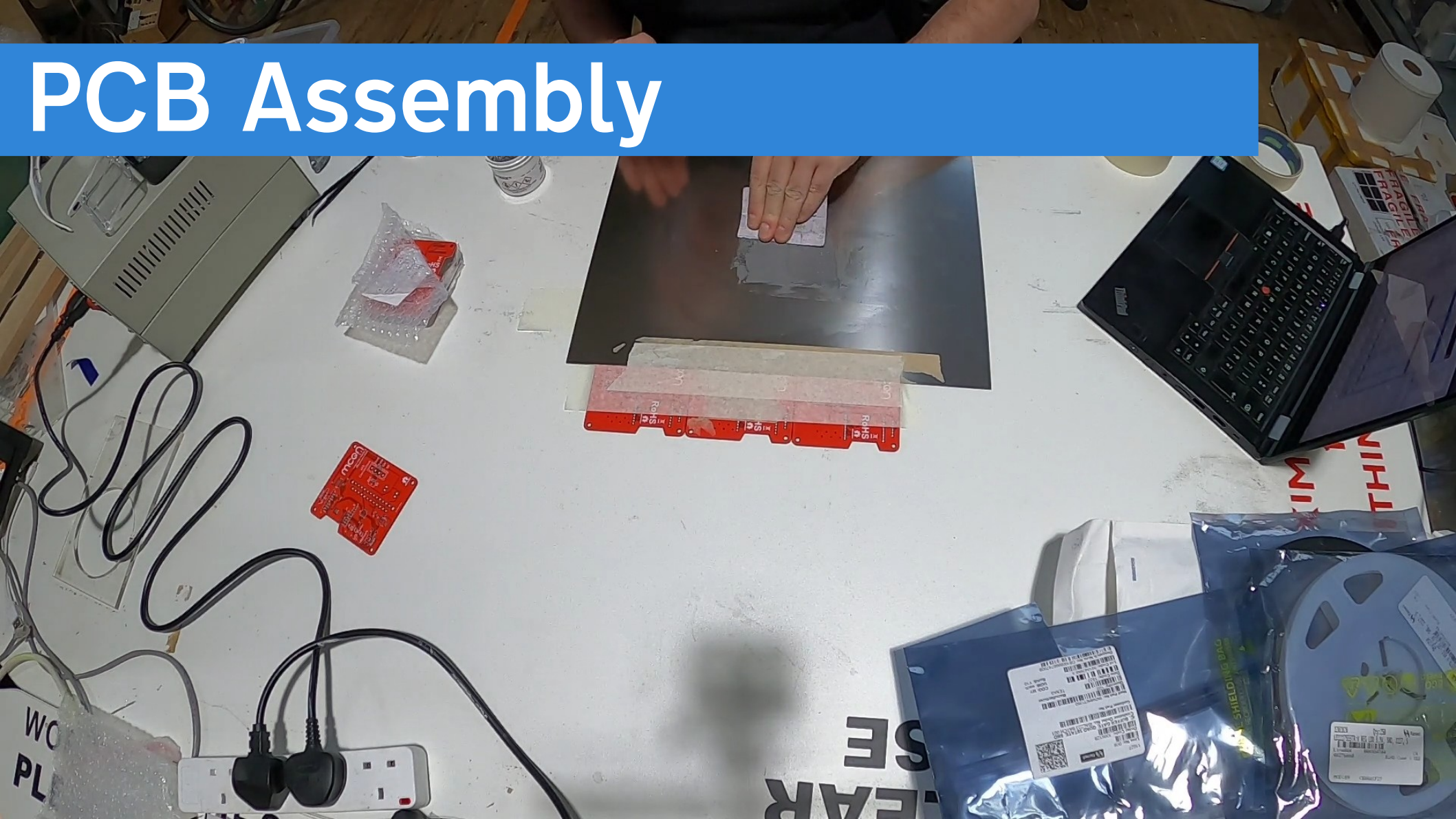
I'm not saying these futures are impossible, but they feel hard to reach from where we are right now.

Because honestly, it feels like I don't get to choose, *we* don't get to choose, those futures.

http://interconnected.org/home/2020/12/11/thingscon

surrounds our tribe of designers, technologists, and founders. It's all those adjacent tribes that never get to see the idealism and the intentions. The marketers, retailers

PCB Assembly



FreeCAD 0.18.4

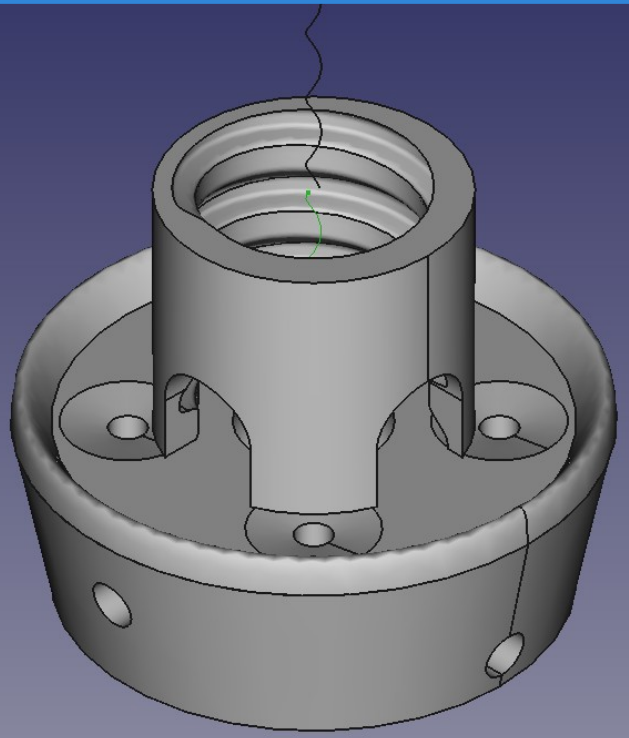
FreeCAD

Labels & Attributes

- Pad
  - Sketch
- ShapeBinder
- SubtractivePipe
  - Bottle_M_ThreadProfile
- Pocket
  - SeedAperture
- Pocket001
  - SecondSeedAperture
  - UnusedUpperPerch
- Helix
- KeyDimensions
- SeedRestrictor
- Lip
  - Origin001
  - Revolution
    - LipProfile
- Chamfer
  - DrainageHoles

Property	Value
Base	
Trace Su…	false
Label	ShapeBinder

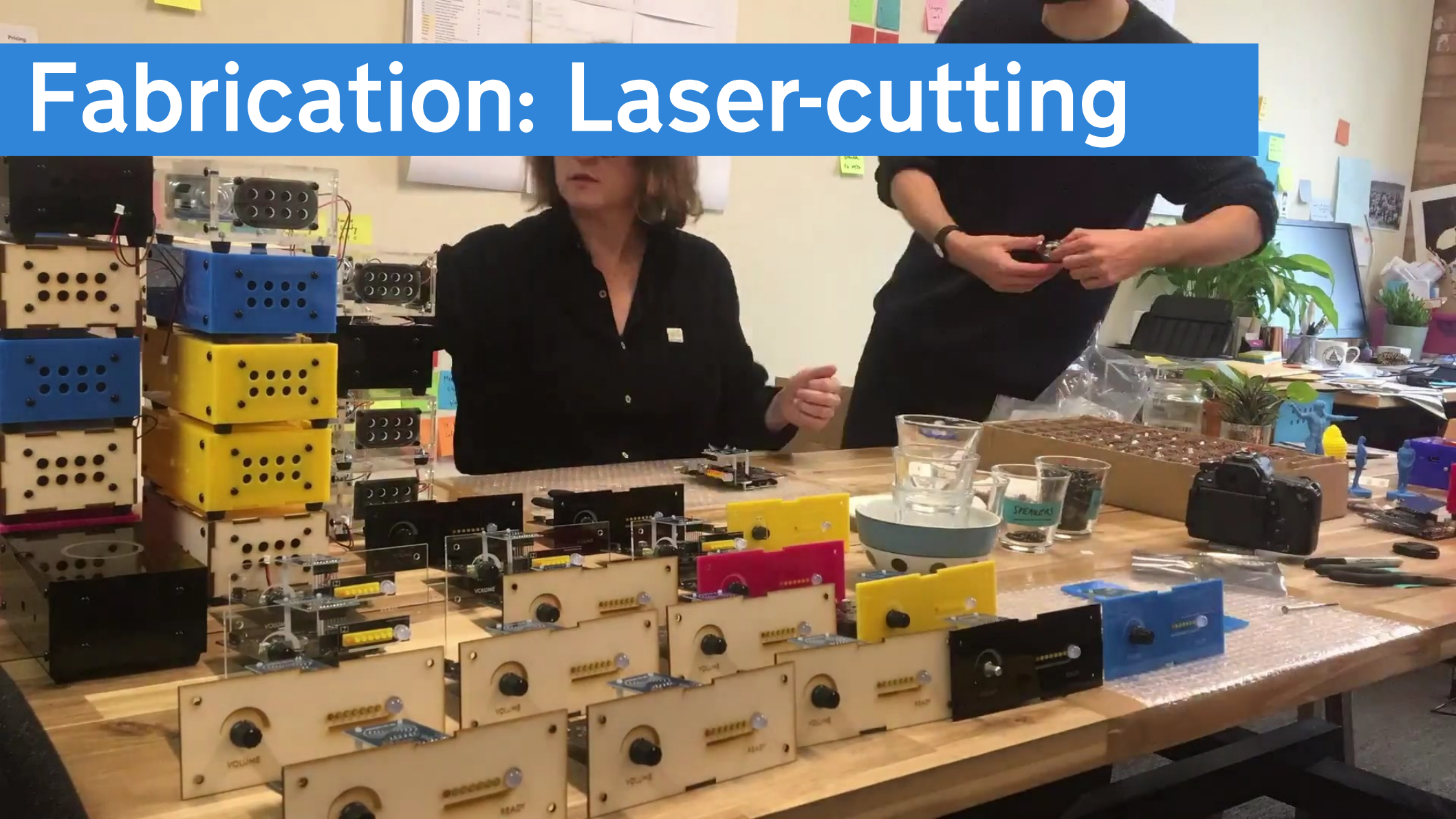
View | Data



Start page | AckersBell : 1 | BottleFeeder : 1

CAD 181.40 mm x 117.18 mm

Fabrication: Laser-cutting



Fabrication: CNC

Sales

tindie

Search products

Search

mcqn_ltd

Cart

DIY Electronics | 3D Printing & CNC | Camera Equipment | IoT & Smart Home | Robots & Drones | Sound | Supplies | Flea Market Beta

Electronics / Lights

Remember that changes to your product can take up to 15 minutes to update across the site.

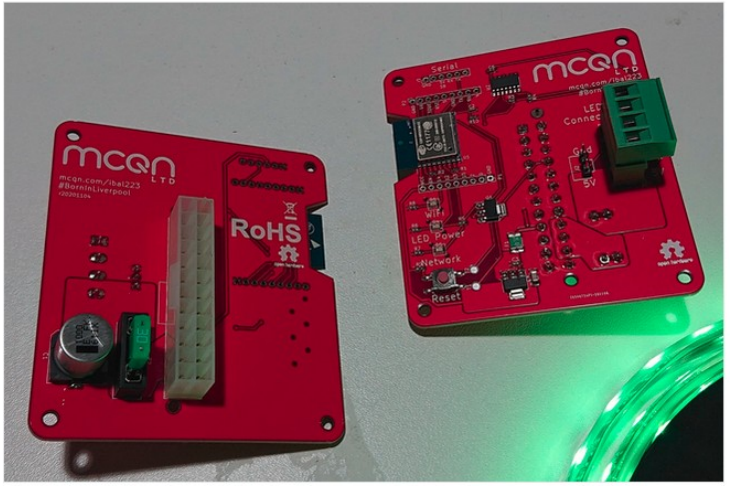
Edit Product

My Baby's Got LED

An ESP8266 board to control a string of RGB LED Neopixels, powered by a standard ATX PC power supply

Designed by MCQN Ltd in United Kingdom

Wishlist Tweet Share Pin



ntrol a string of RGB LED Neopixels, powered by a standard ATX PC power supply

$55.00

(£41.41 GBP)

Ask a Question

Shipping to United Kingdom starts at $5.00 (£3.76 GBP)

Ships from United Kingdom

Quantity*

1

Only 50 left in stock, order now!

Add to Cart

Buy with confidence.

Our Tindie Guarantee protects your purchase from fraud. Learn More

About Seller

MCQN Ltd

https://tindie.com/stores/mcqn_ltd/

1. What's wrong with IoT?
2. How can Open Hardware and Open Software help?
3. My journey so far
4. The future...

Thank you.

Adrian McEwen
mcqn.com
@amcewen / @MCQN_Ltd
@amcewen@mastodon.me.uk
tindie.com/shops/mcqn_ltd/