Building stuff for fun and profit

confessions from a life in code and cables

Dr Holly Cummins
Bluemix Garage, London
@holly_cummins

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What is the Bluemix Garage?
(It's not **actually** a Garage.)

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EMAIL

A GARAGE THAT DEVELOPERS CAN CALL HOME FOR CLOUD INNOVATION

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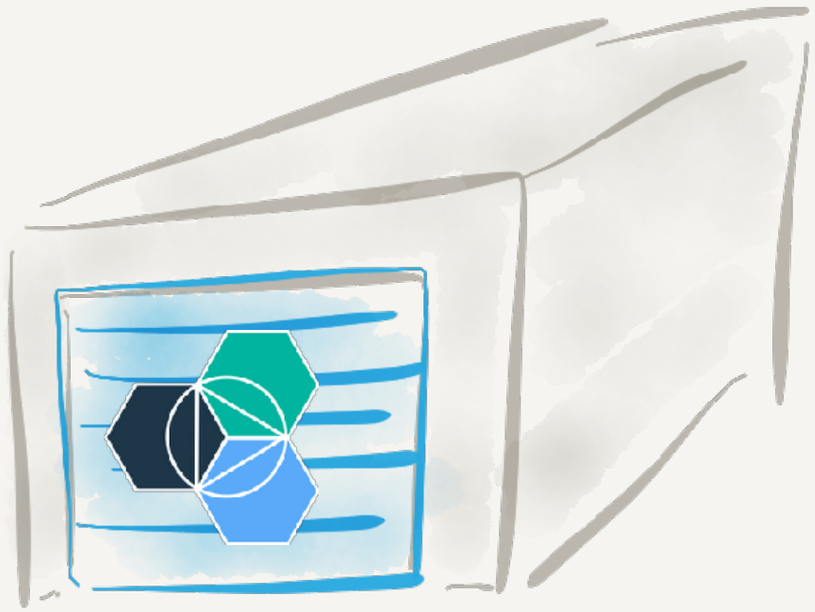
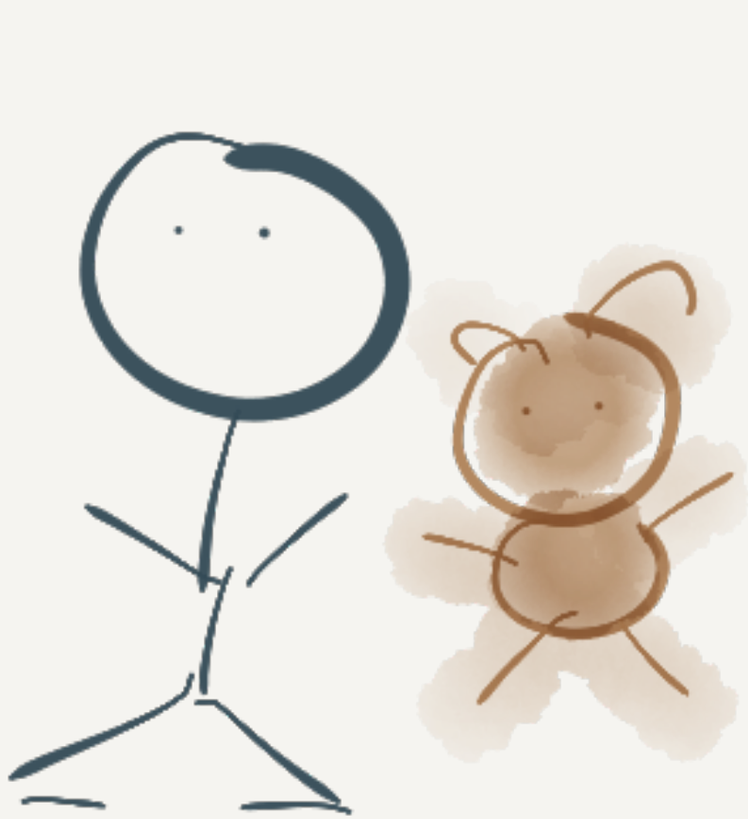
LAST MONTH MY company opened the first Bluemix Garage, a place where developers, product managers and designers from the smallest startups to the largest companies can congregate, network and collaborate to build the



http://ibm.biz/bluemixgaragelondon

1979

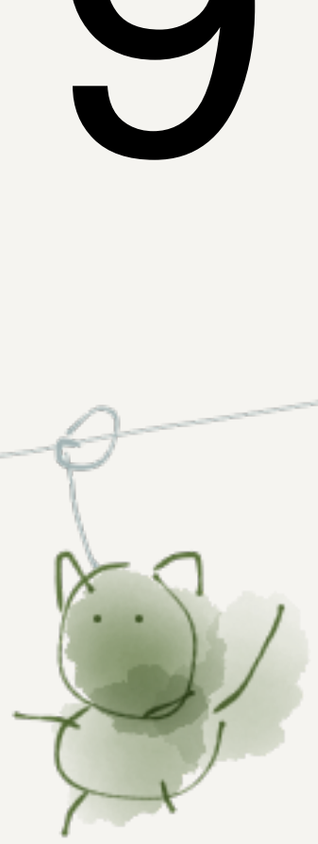
Cuddly toy zipwire



Cuddly toy hotel

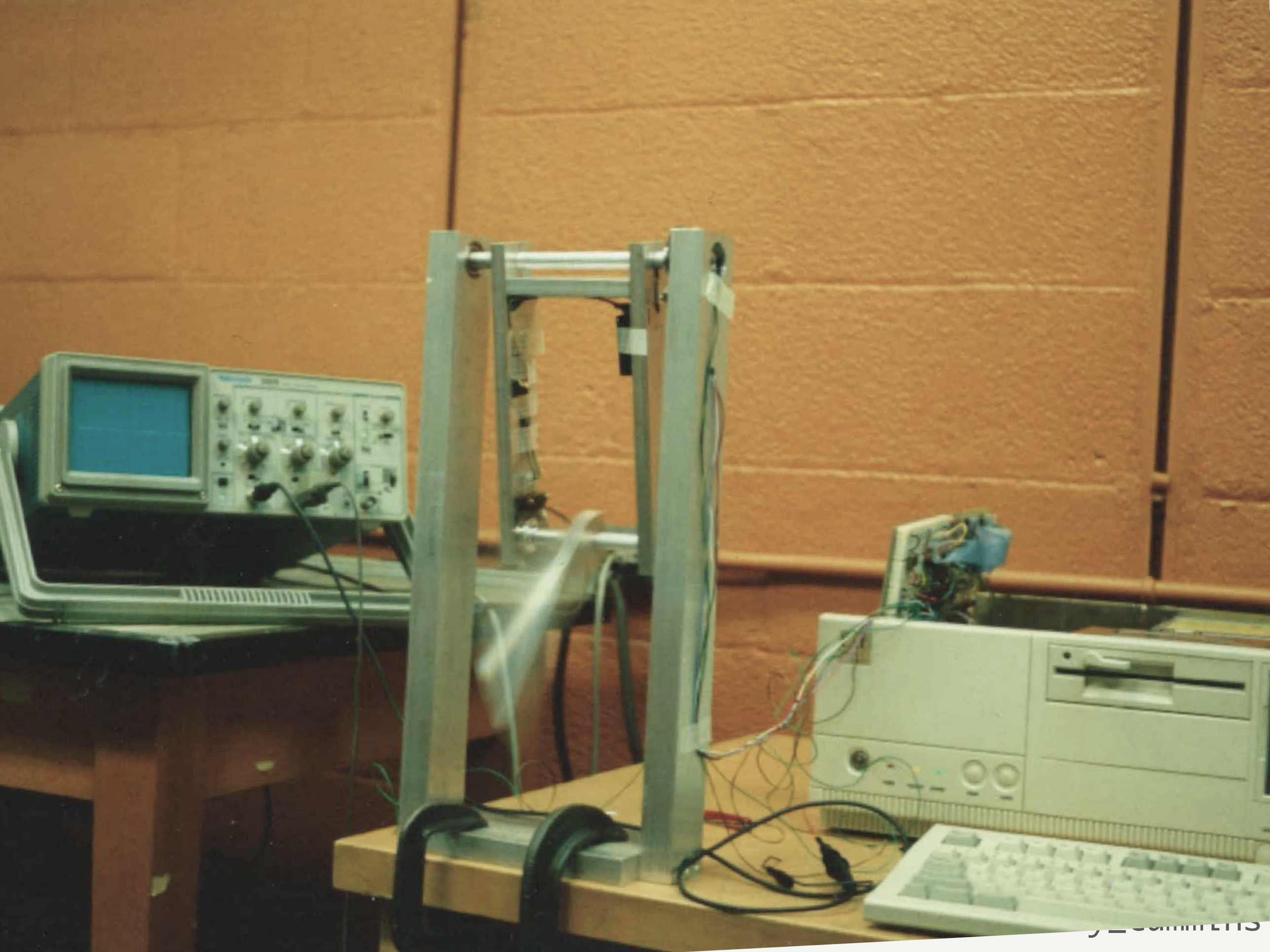
1979

Cuddly toy
zipwire

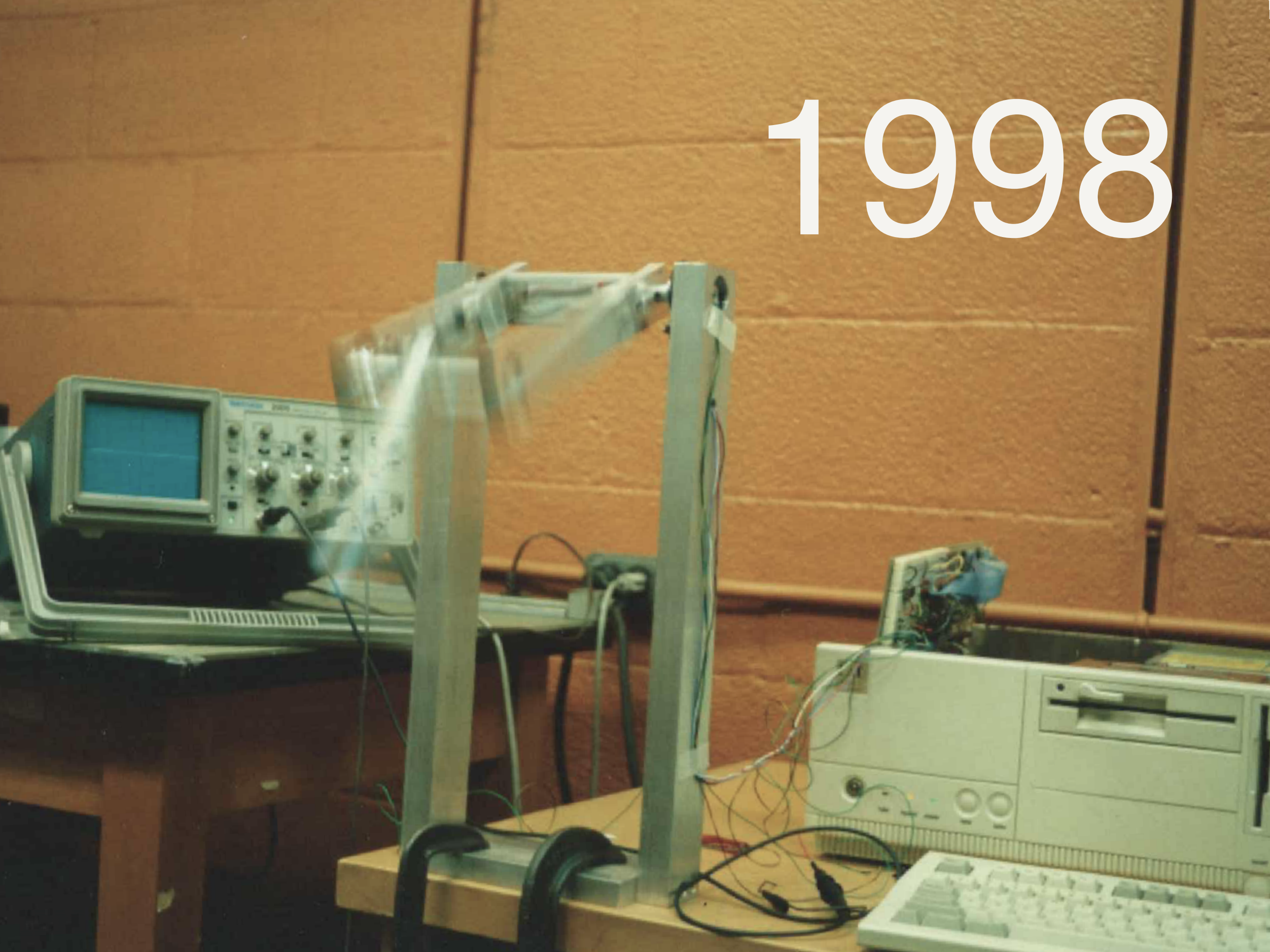


Cuddly toy
hotel

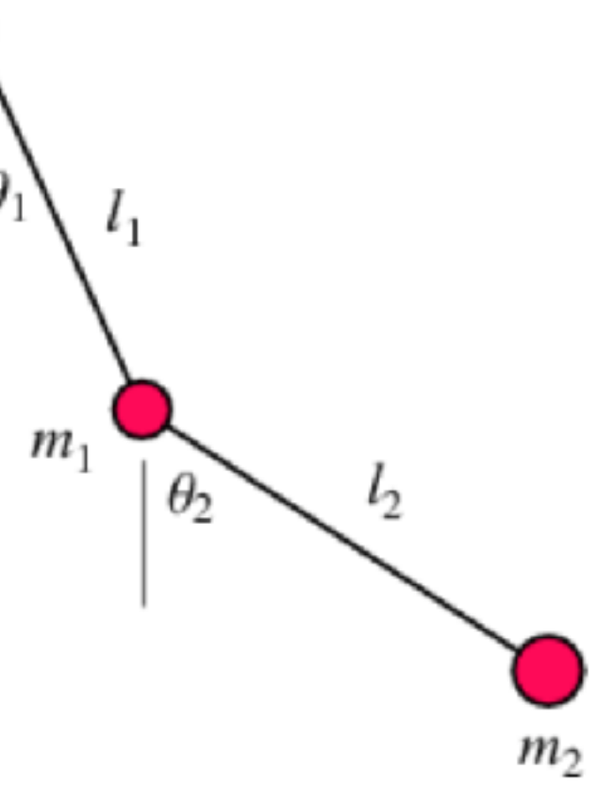
1987



1998



Double Pendulum

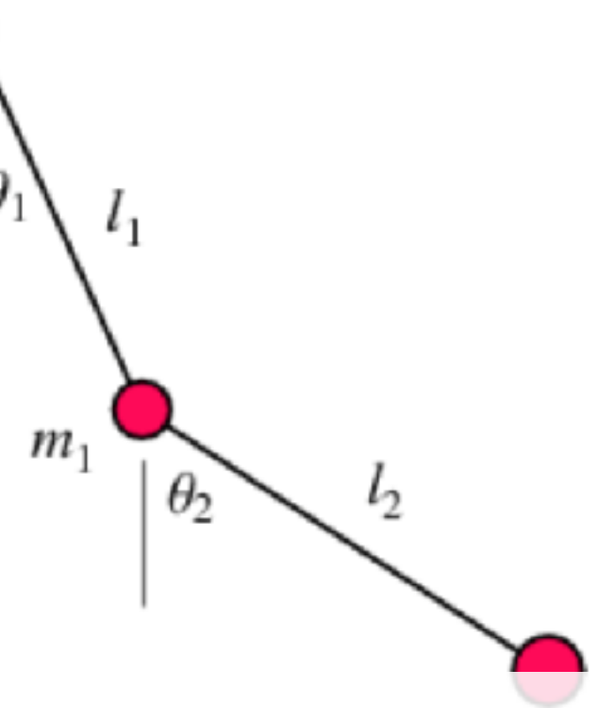


A double pendulum consists of one pendulum attached to another. Double pendula are an example of a simple physical system which
exhibit chaotic behavior. Consider a double bob pendulum with masses m_1 and m_2 attached by rigid massless wires of lengths l
l_2. Further, let the angles the two wires make with the vertical be denoted θ_1 and θ_2, as illustrated above. Finally, let gravity be give

Then the positions of the bobs are given by

$$\begin{aligned} x_1 &= l_1 \sin\theta_1 \\ y_1 &= -l_1 \cos\theta_1 \\ x_2 &= l_1 \sin\theta_1 + l_2 \sin\theta_2 \end{aligned}$$

Double Pendulum



No matter how much math you throw at it, you can't actually predict what it's going to do.

A double pendulum consists of one pendulum attached to another. Double pendula are an example of a simple physical system which exhibit chaotic behavior. Consider a double bob pendulum with masses m_1 and m_2 attached by rigid massless wires of lengths l_1 and l_2. Further, let the angles the two wires make with the vertical be denoted θ_1 and θ_2, as illustrated above. Finally, let gravity be given by g.

Then the positions of the bobs are given by

$$\begin{aligned} x_1 &= l_1 \sin\theta_1 \\ y_1 &= -l_1 \cos\theta_1 \\ x_2 &= l_1 \sin\theta_1 + l_2 \sin\theta_2 \end{aligned}$$

Idea.

Idea.

Built it.

Idea.

Built it.

Used it.

Idea.

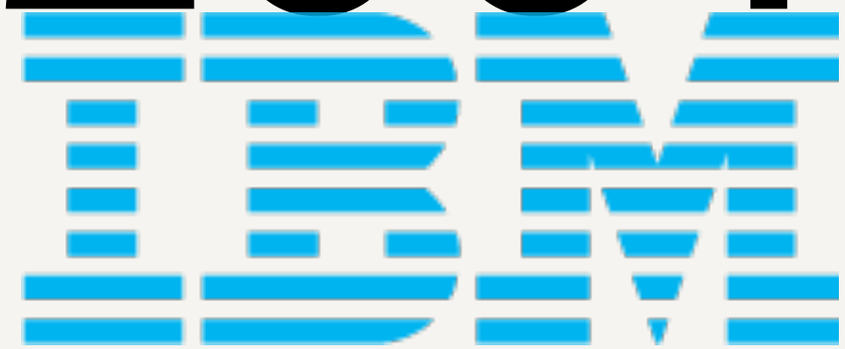
Built it.

Used it.

#devops

2001

2001



2002

@holly_cummins

100 page design document.

2002

@holly_cummins

100 page design document.
Seriously.

2002

@holly_cummins

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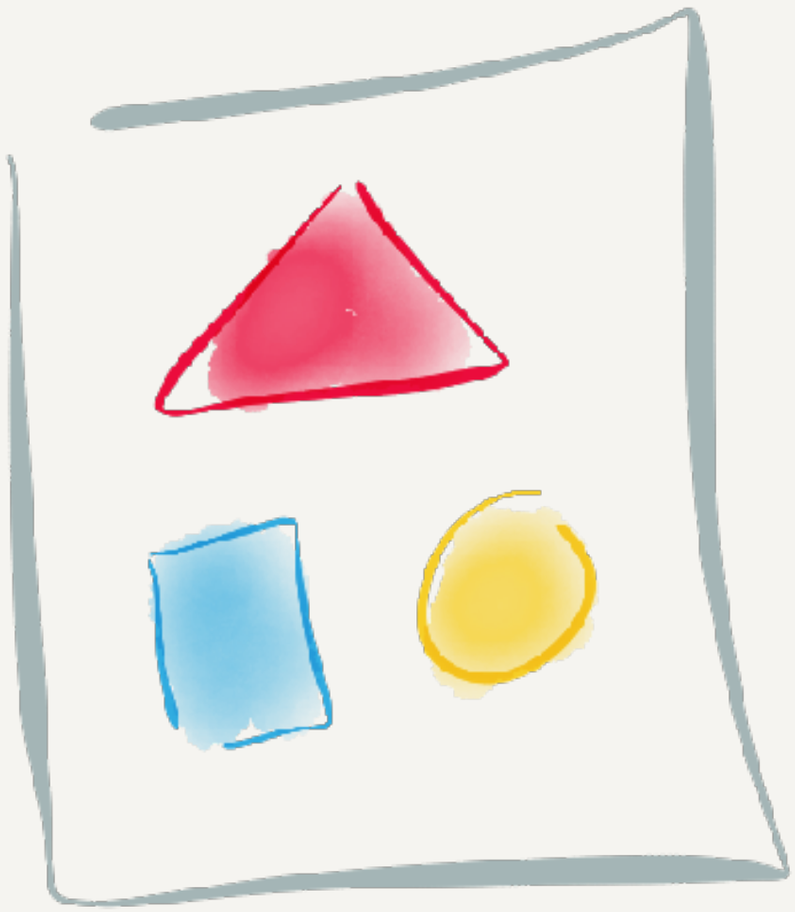

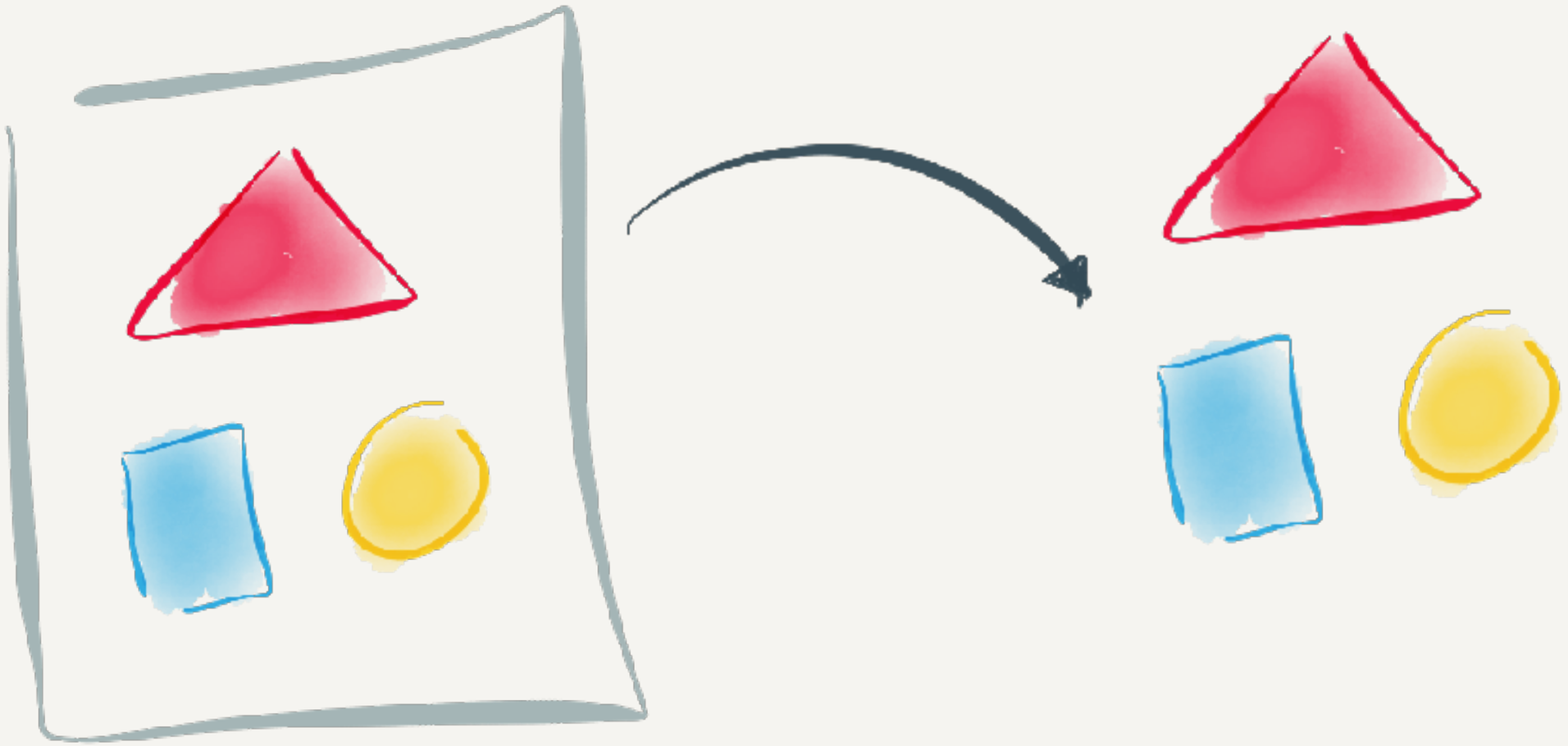

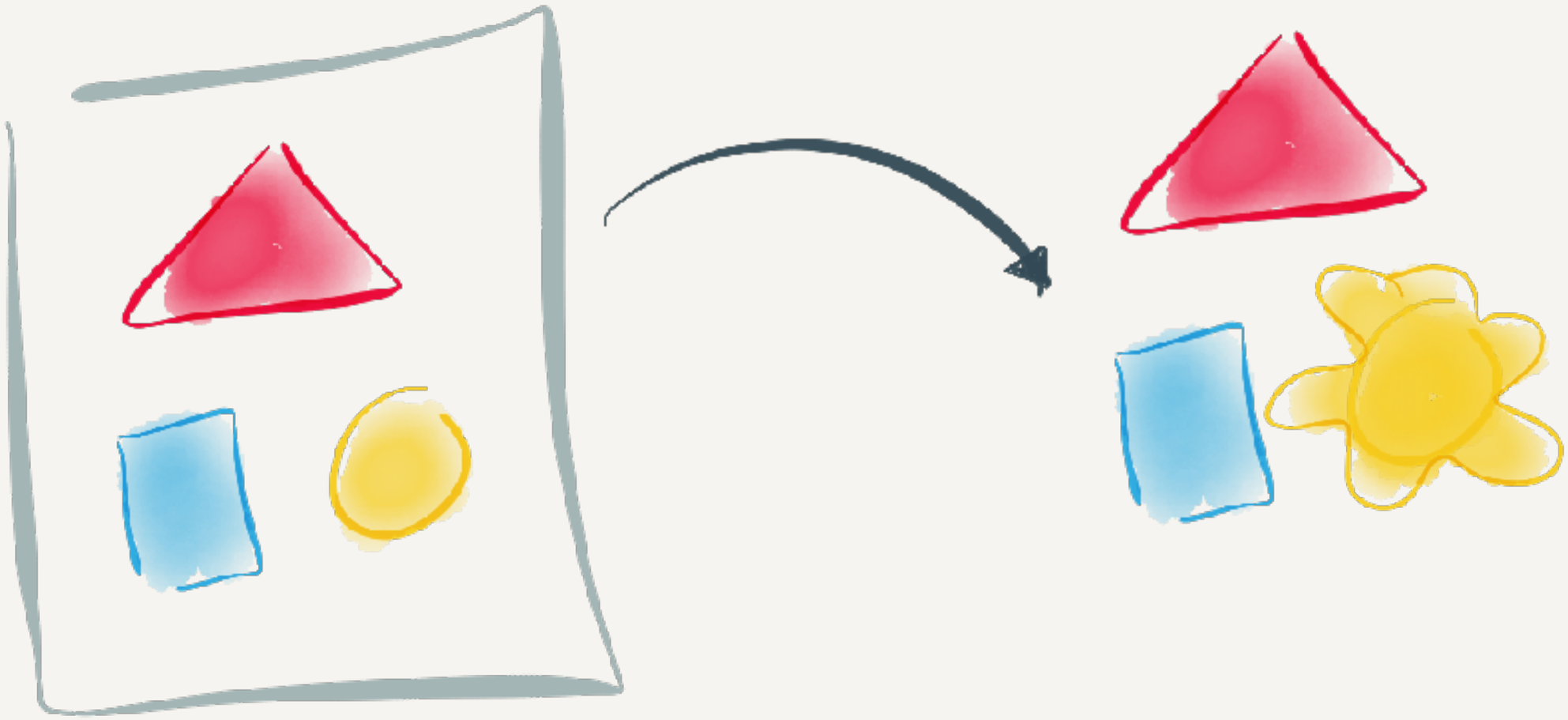

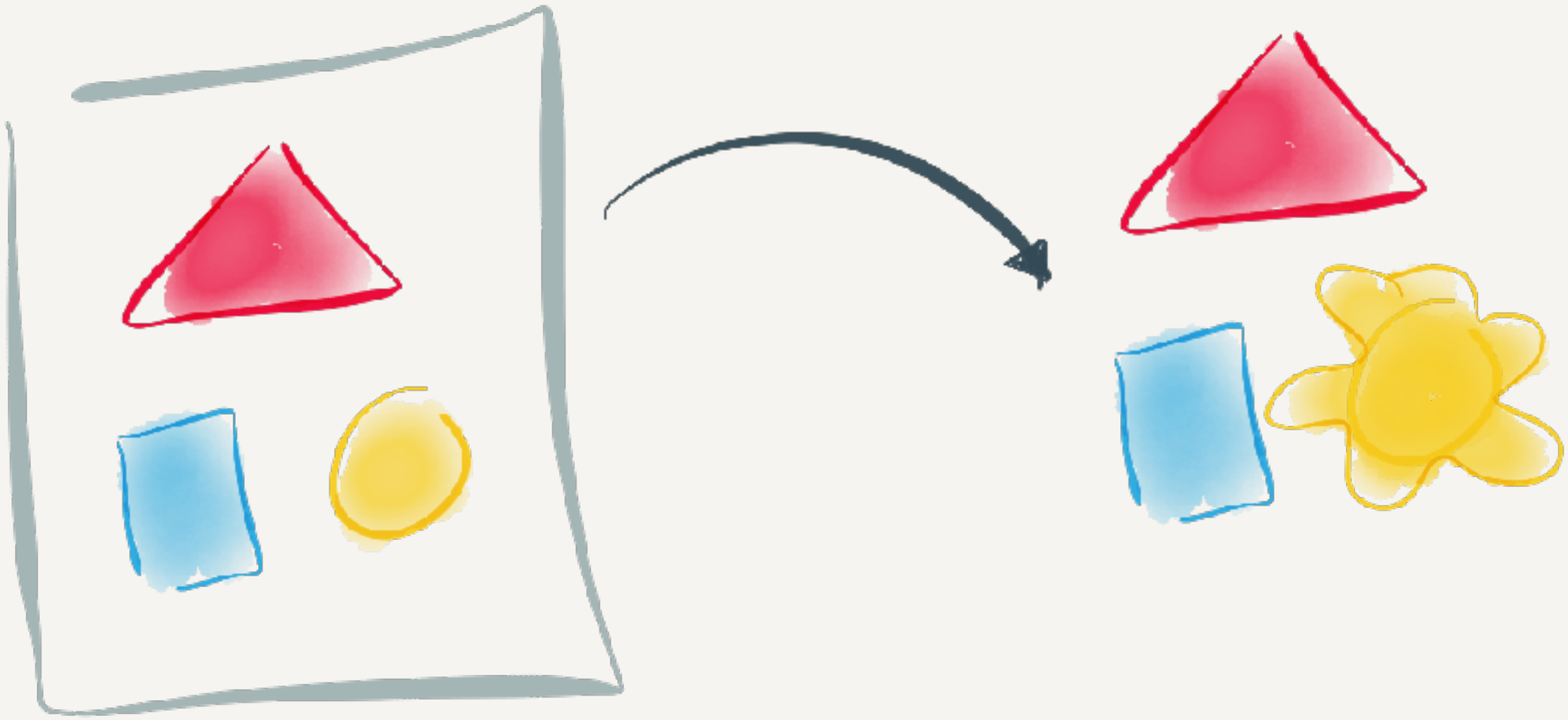

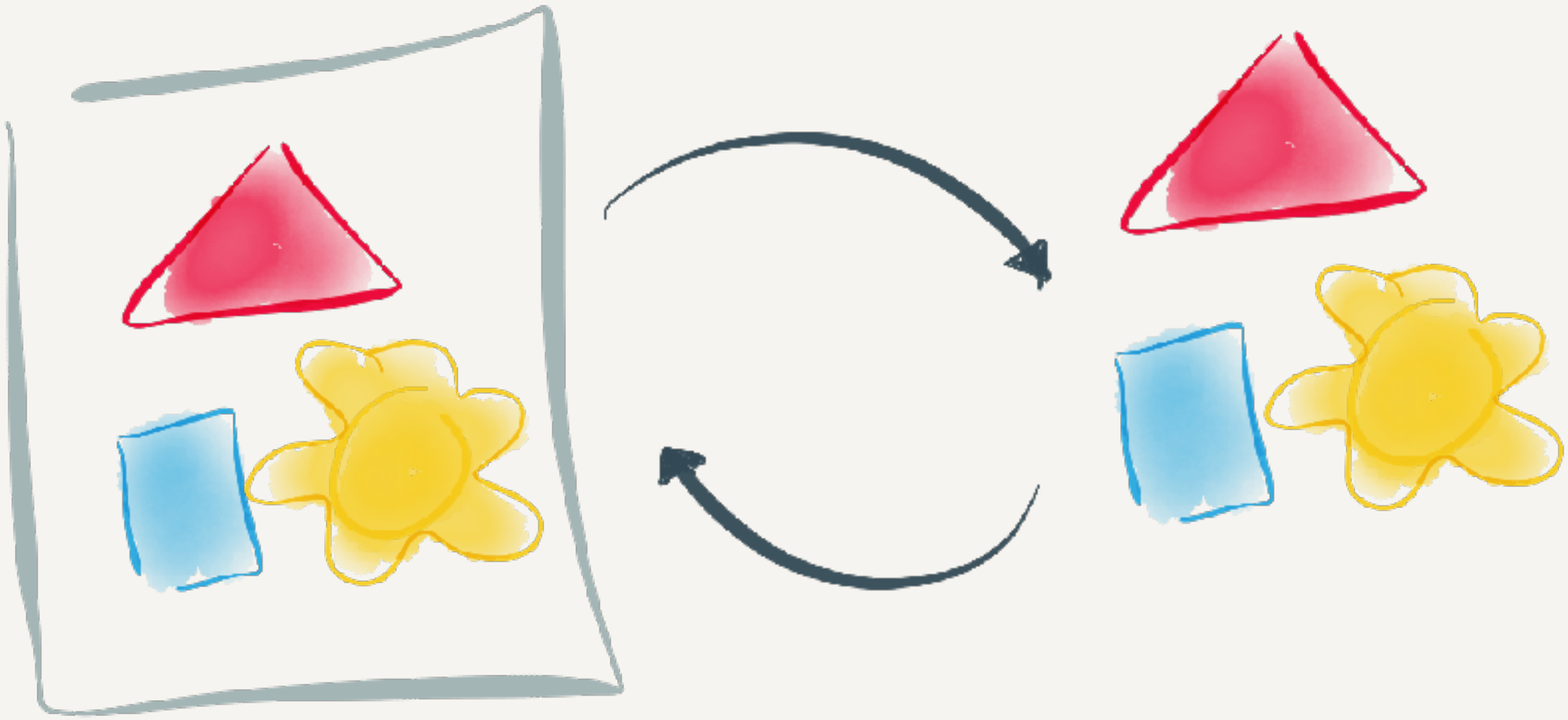

Общая платформа группы. Rational SoDA

Rational SoDA

Автоматически генерирует документы, извлекая информацию из файлов, которые производятся при разработке проекта, включая исходный код и модели, произведенные инструментами Rational.
Форматирует информацию согласно предопределенным шаблонам.

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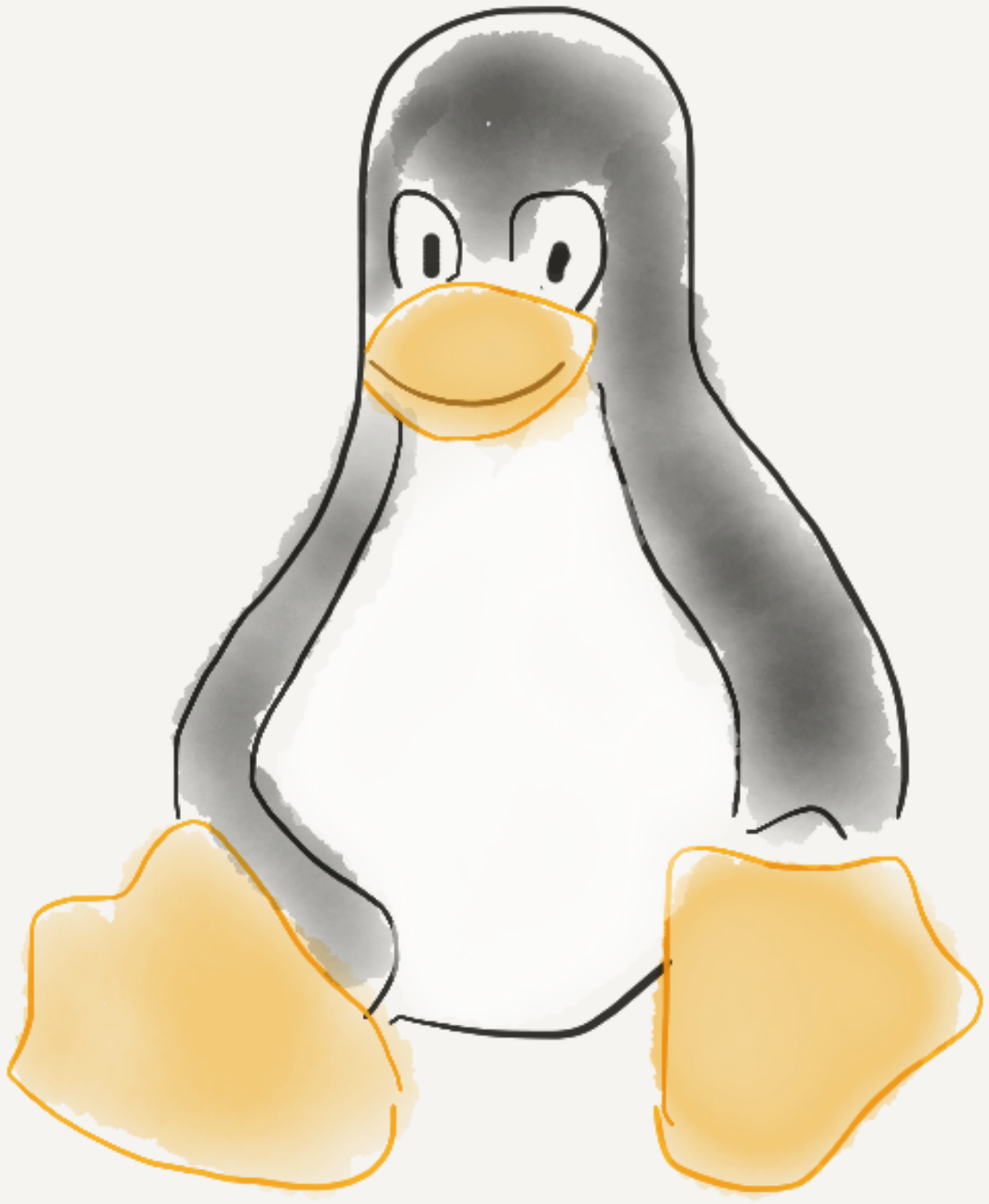
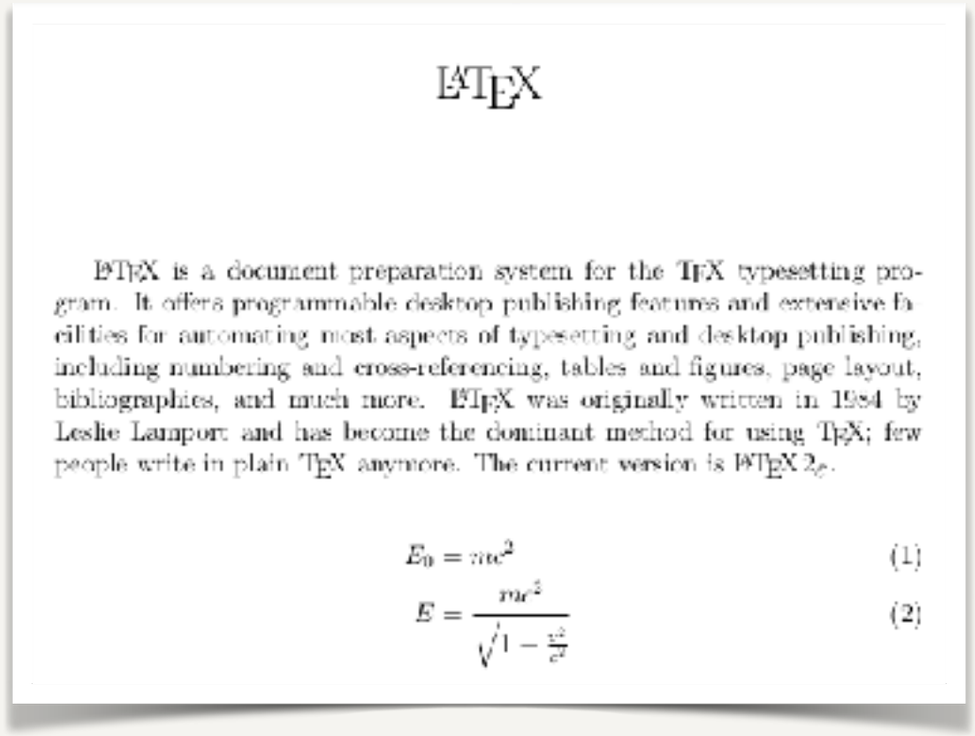
@holly_cummins

But



Java



LaTeX

LaTeX is a document preparation system for the TeX typesetting program. It offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout, bibliographies, and much more. LaTeX was originally written in 1984 by Leslie Lamport and has become the dominant method for using TeX; few people write in plain TeX anymore. The current version is LaTeX 2_ε.

$$E_0 = mc^2 \tag{1}$$

$$E = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}} \tag{2}$$

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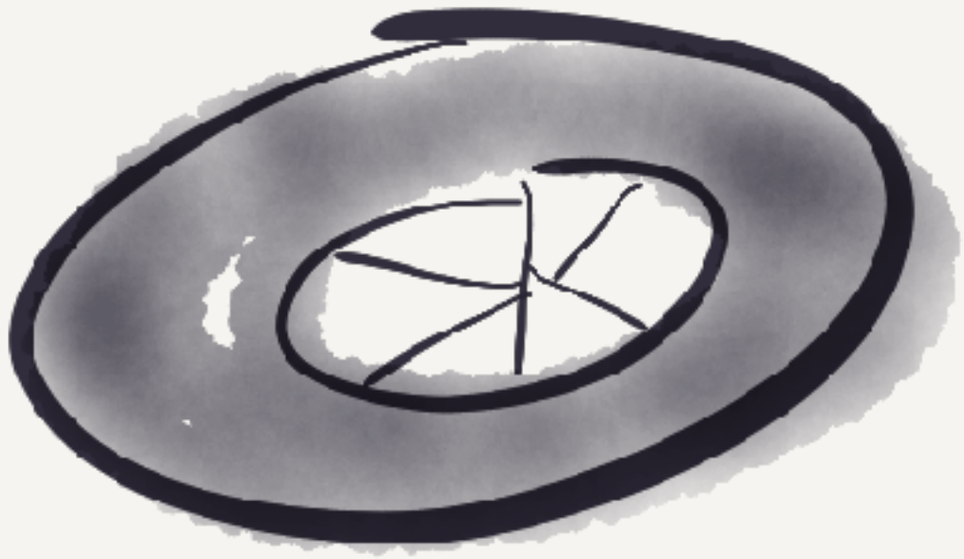

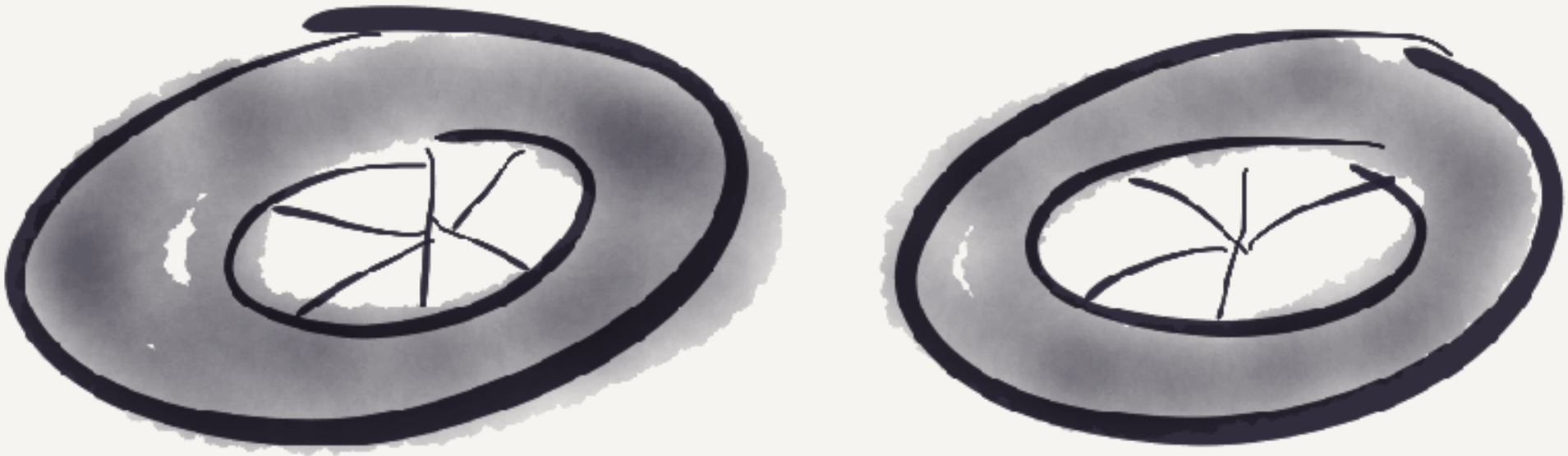

holly's tips for building stuff

holly's tips for building stuff

Don't reinvent wheels.

Unless there's a good reason.

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2011

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WebSphere. software

IBM
WebSphere. software

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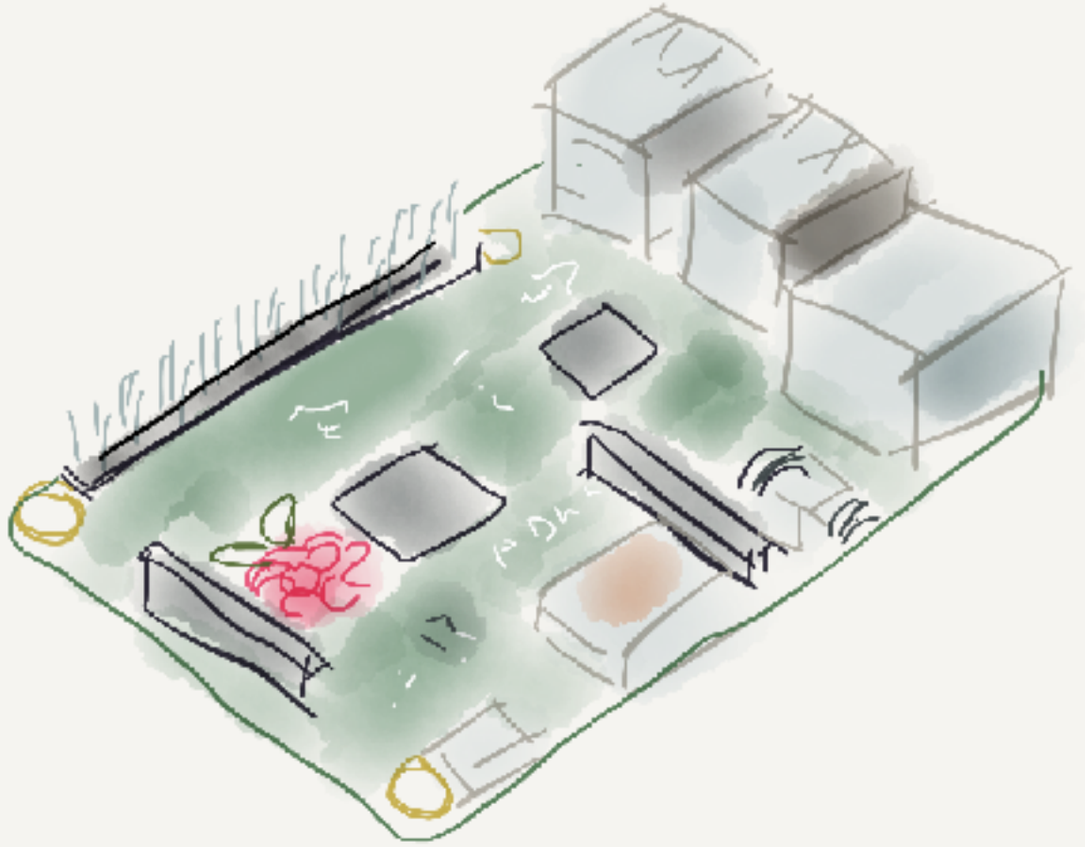
WebSphere. software

+



The WebSphere Hat

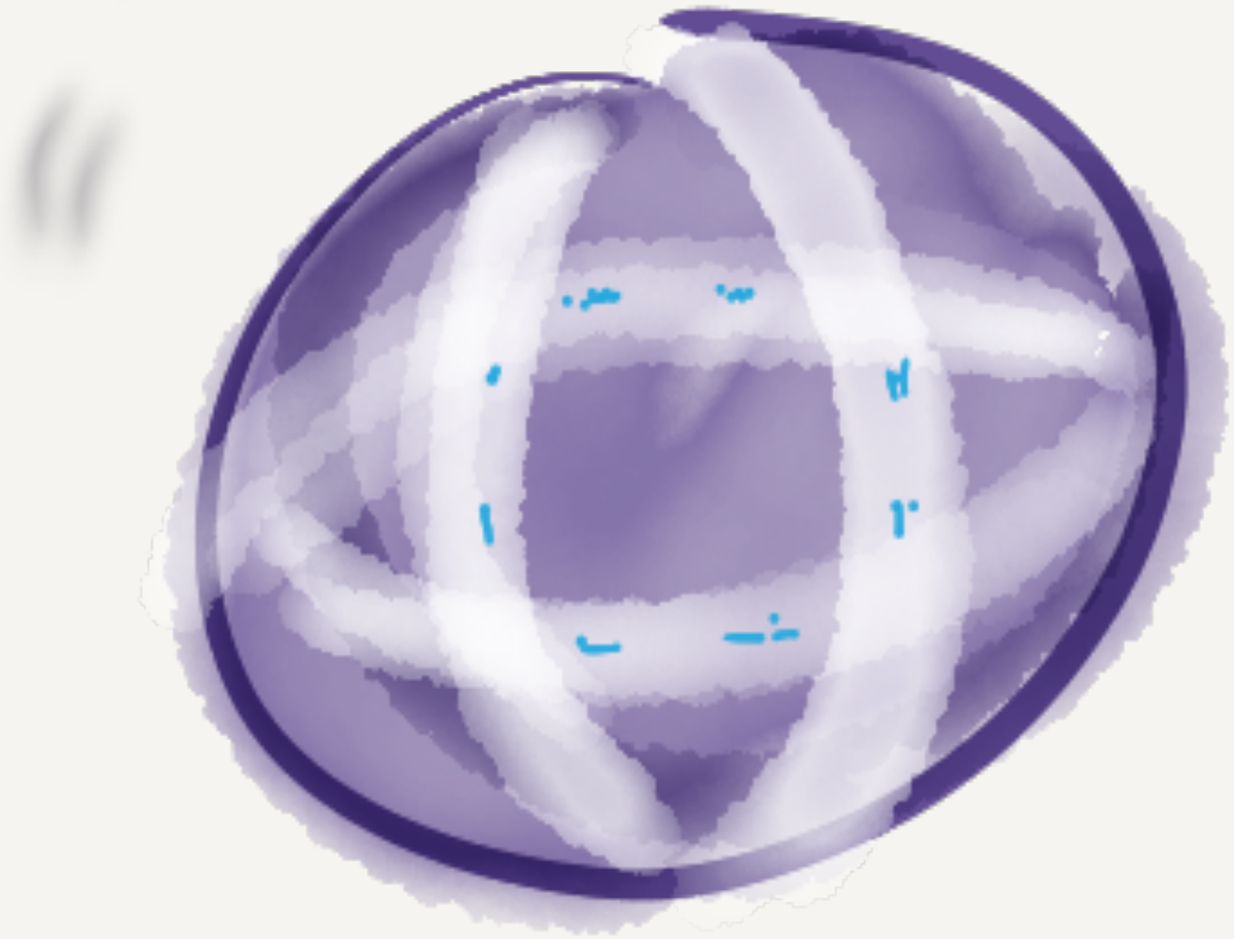
The WebSphere Hat

(“the world’s first wearable application server”)

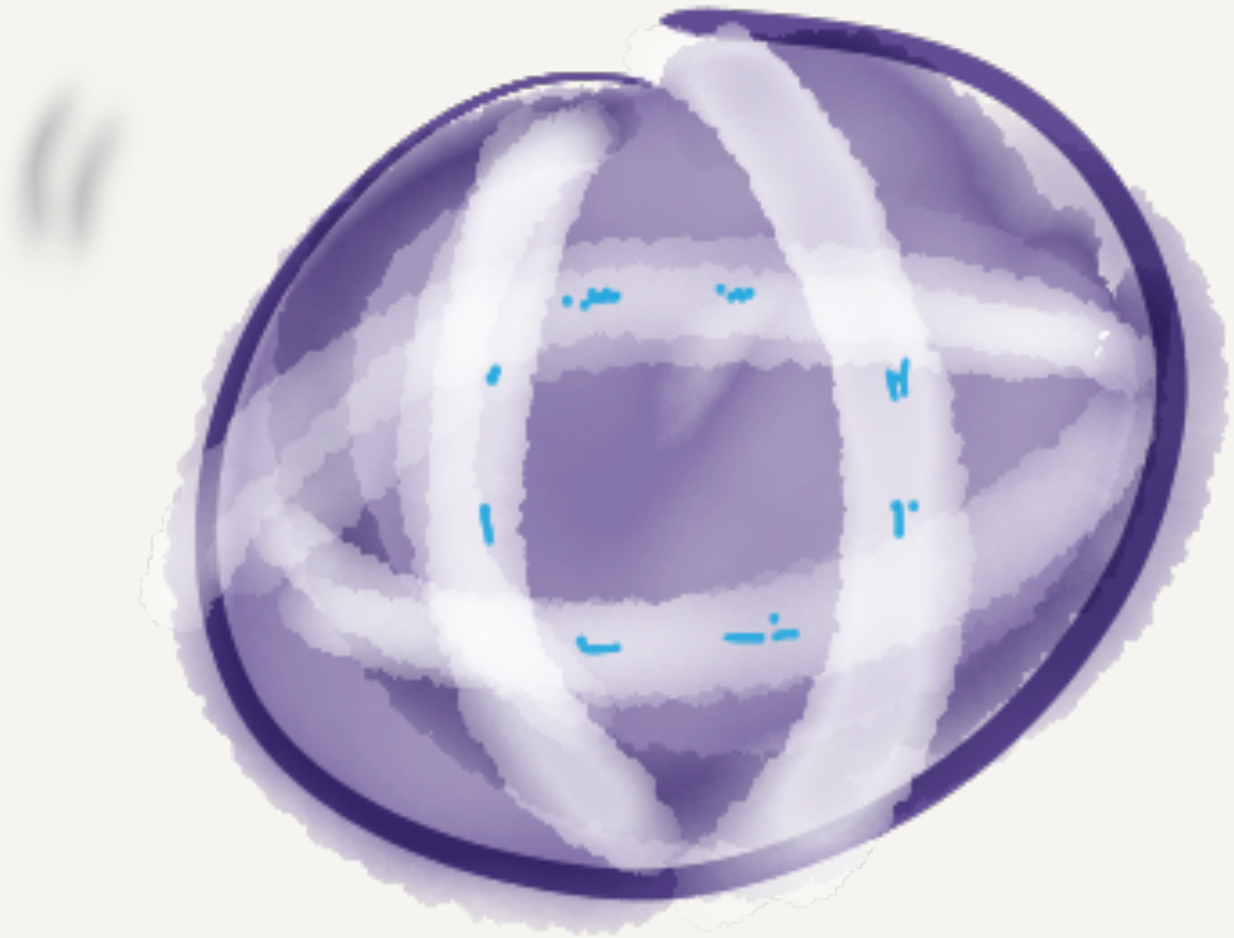
There’s a WebSphere server running **in** that hat

2014

2014



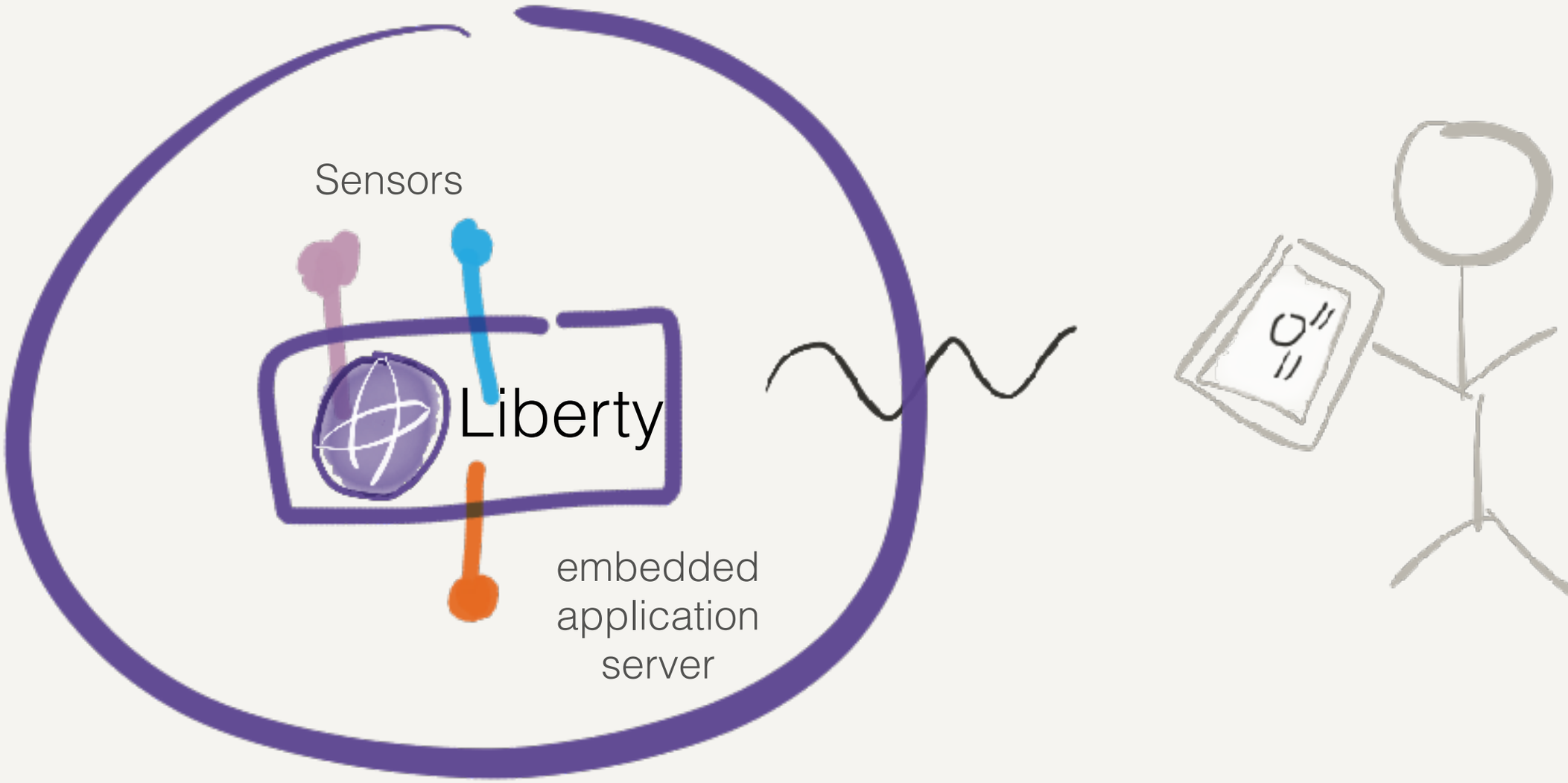
2014

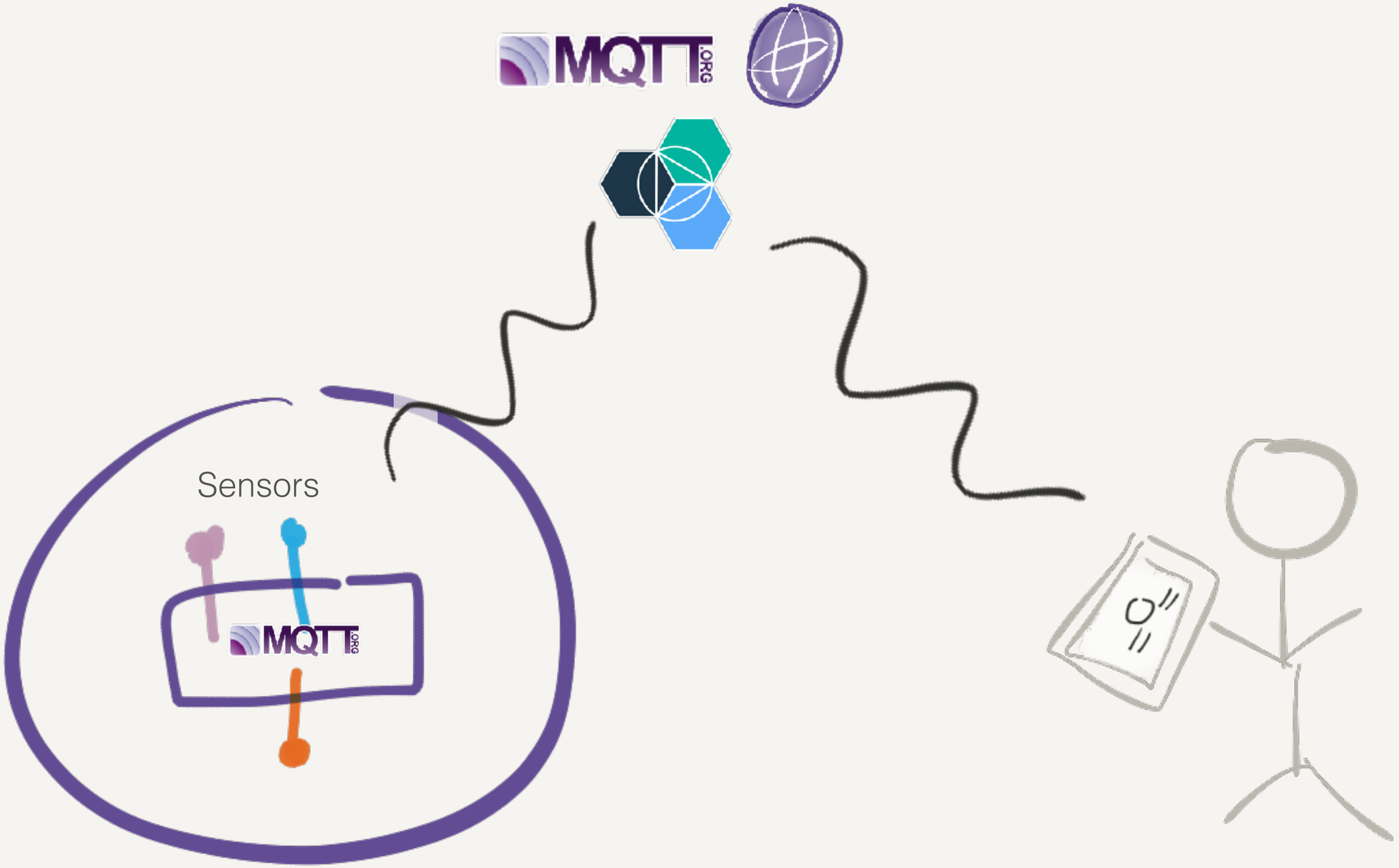


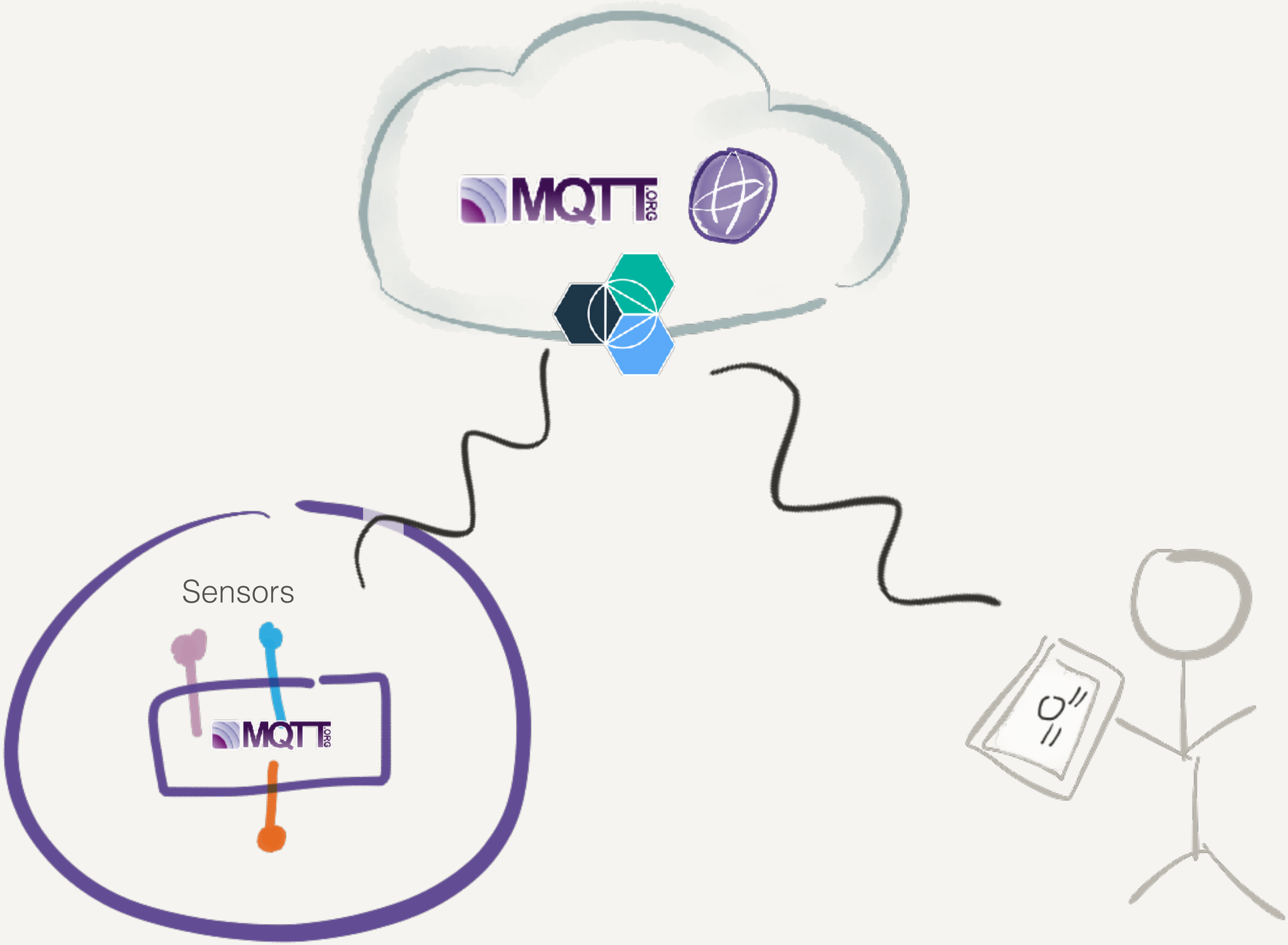
Presenting:

The WebSphere Sphere

(“the cuddly throwable application server”)


Sensors
Liberty
embedded
application
server


MQTT.ORG
Sensors
MQTT.ORG


MQTT.ORG
Sensors
MQTT.ORG

Johan Kaving
@jkaving

Follow

The world's first throwable and cuddly application server at #jfokus talk by @holly_cummins

photo courtesy of re:develop conference, Bournemouth

“Holly, why would anyone want an application server in a cuddly ball?”

–My Mother

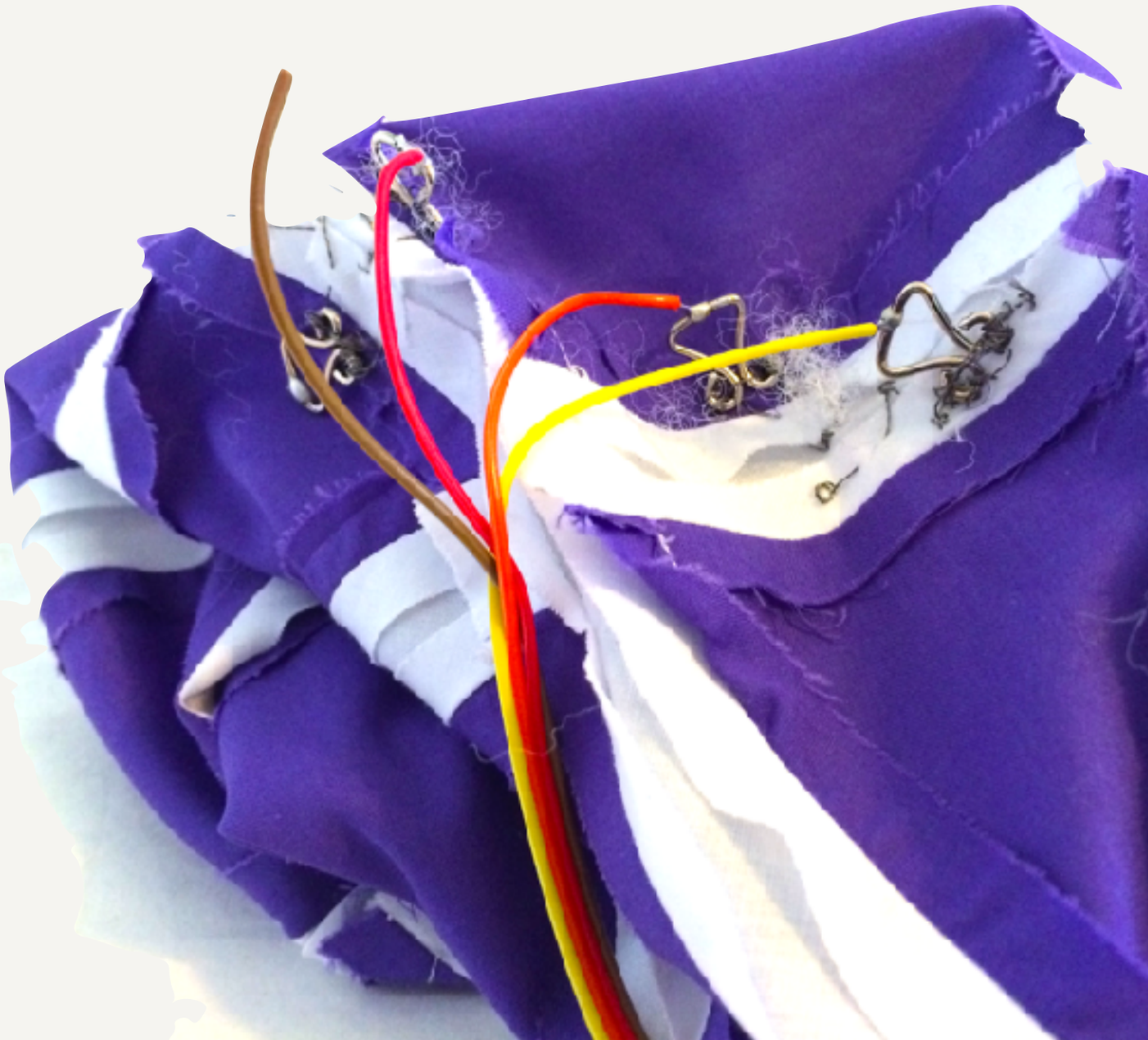
Who **wouldn’t** want an application server in a cuddly ball?

… and then what happened?

… and then what happened?

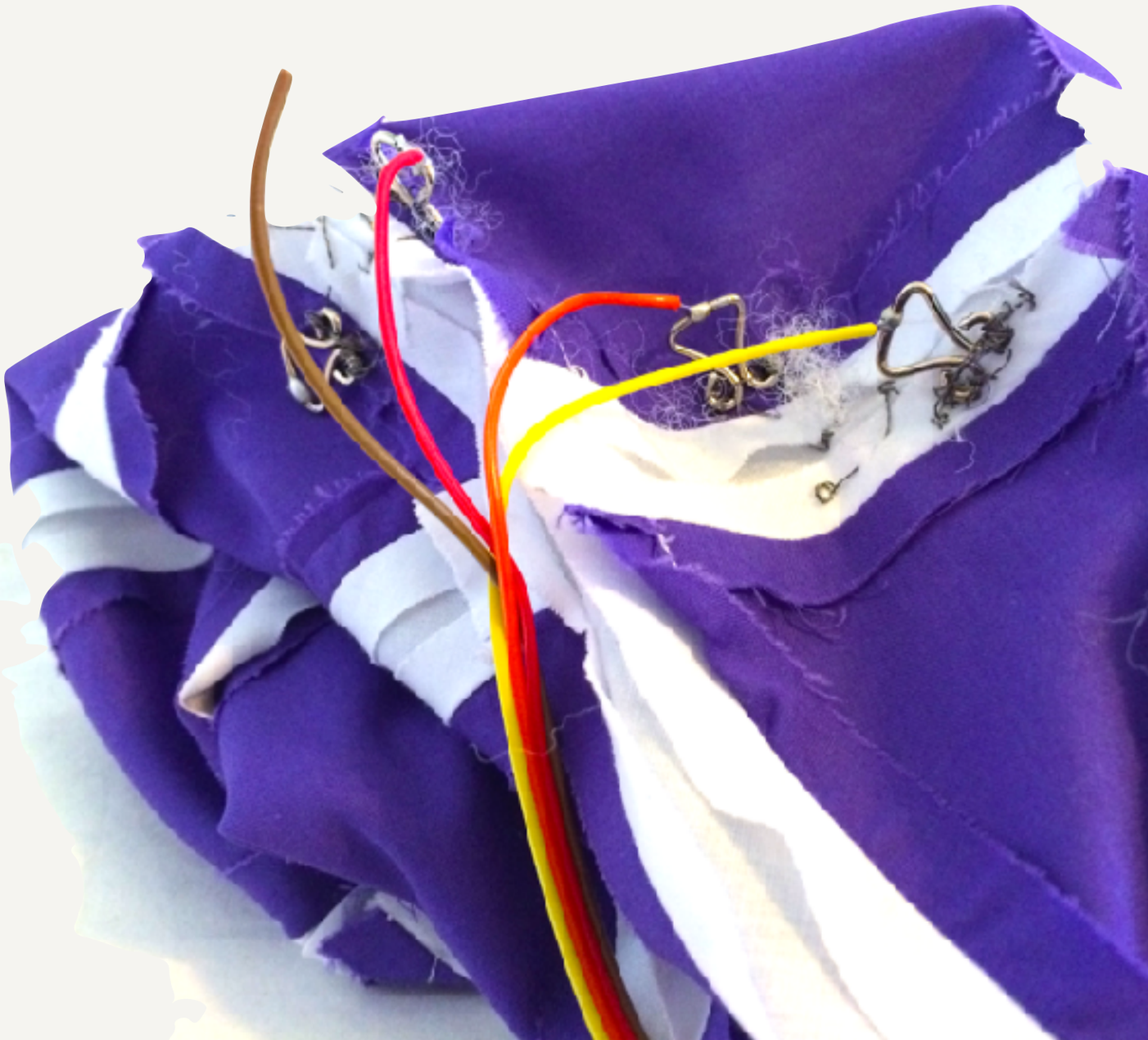
pcDuino could never display on any monitor.

… and then what happened?



… and then what happened?

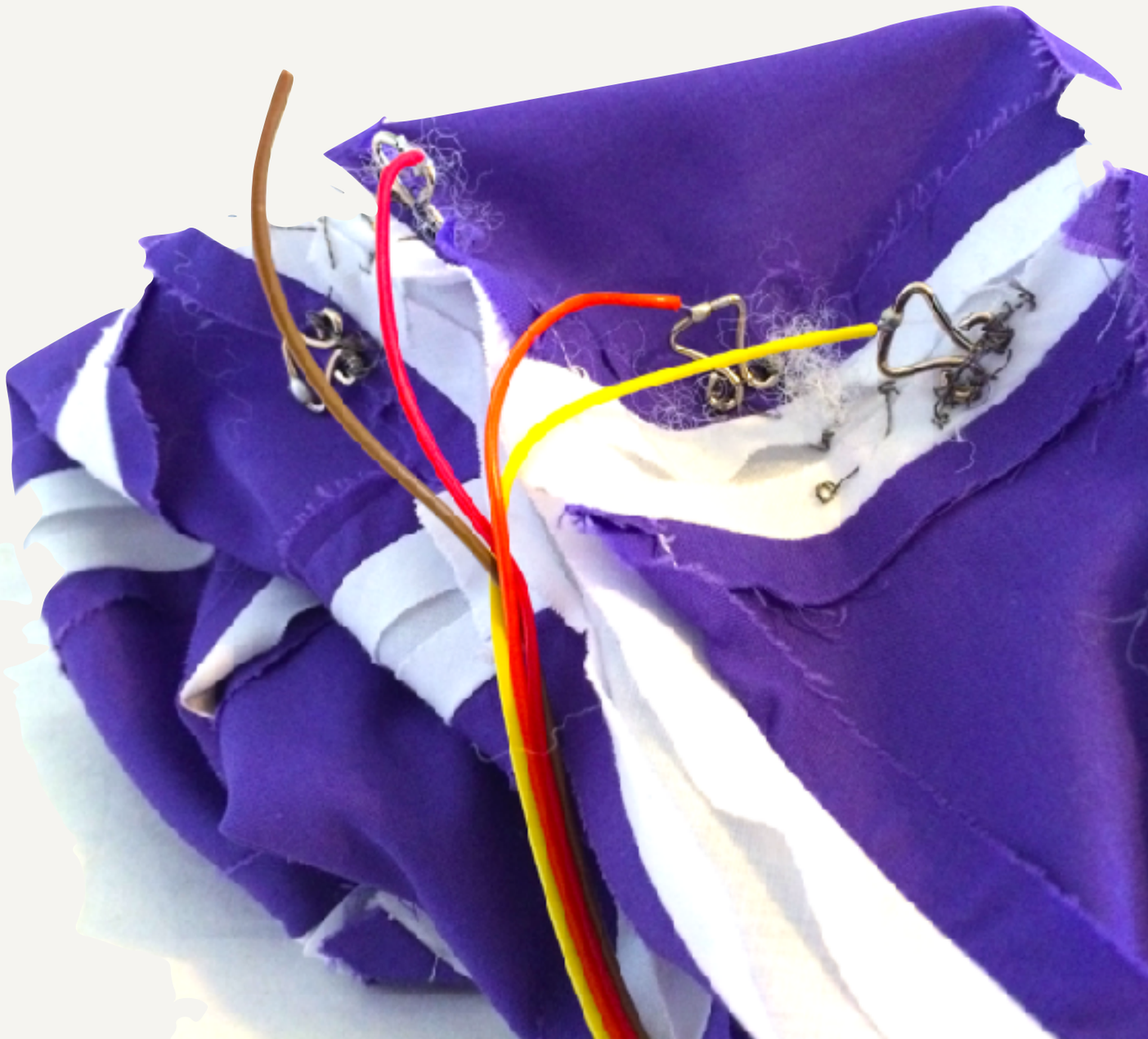
Wires snapped.



… and then what happened?

Wires snapped.

Many times.



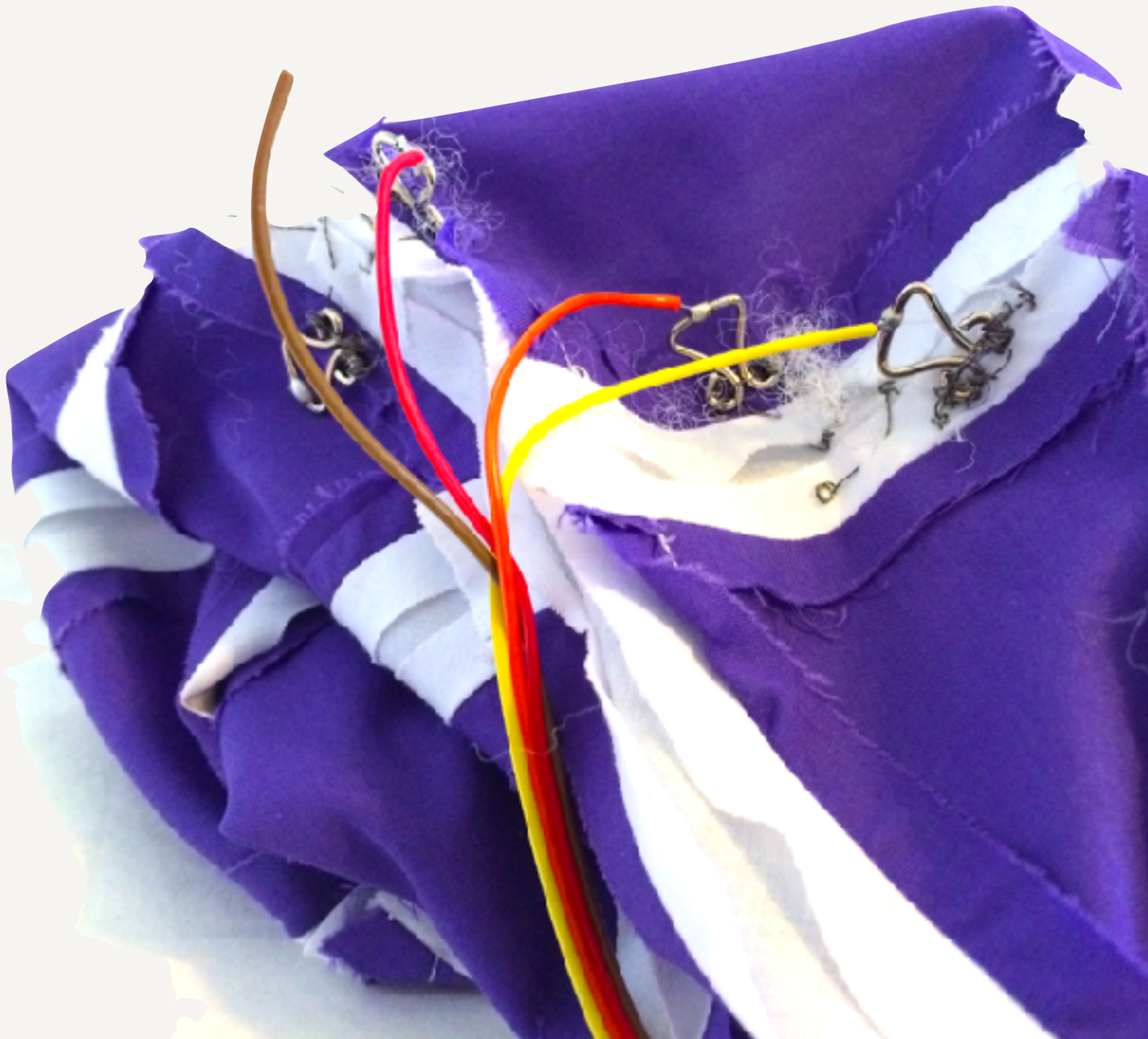
IBM

… and then what happened?

Wires snapped.

Many times.

Inside a unit that had to be disassembled before any repair could be done.



… and then what happened?

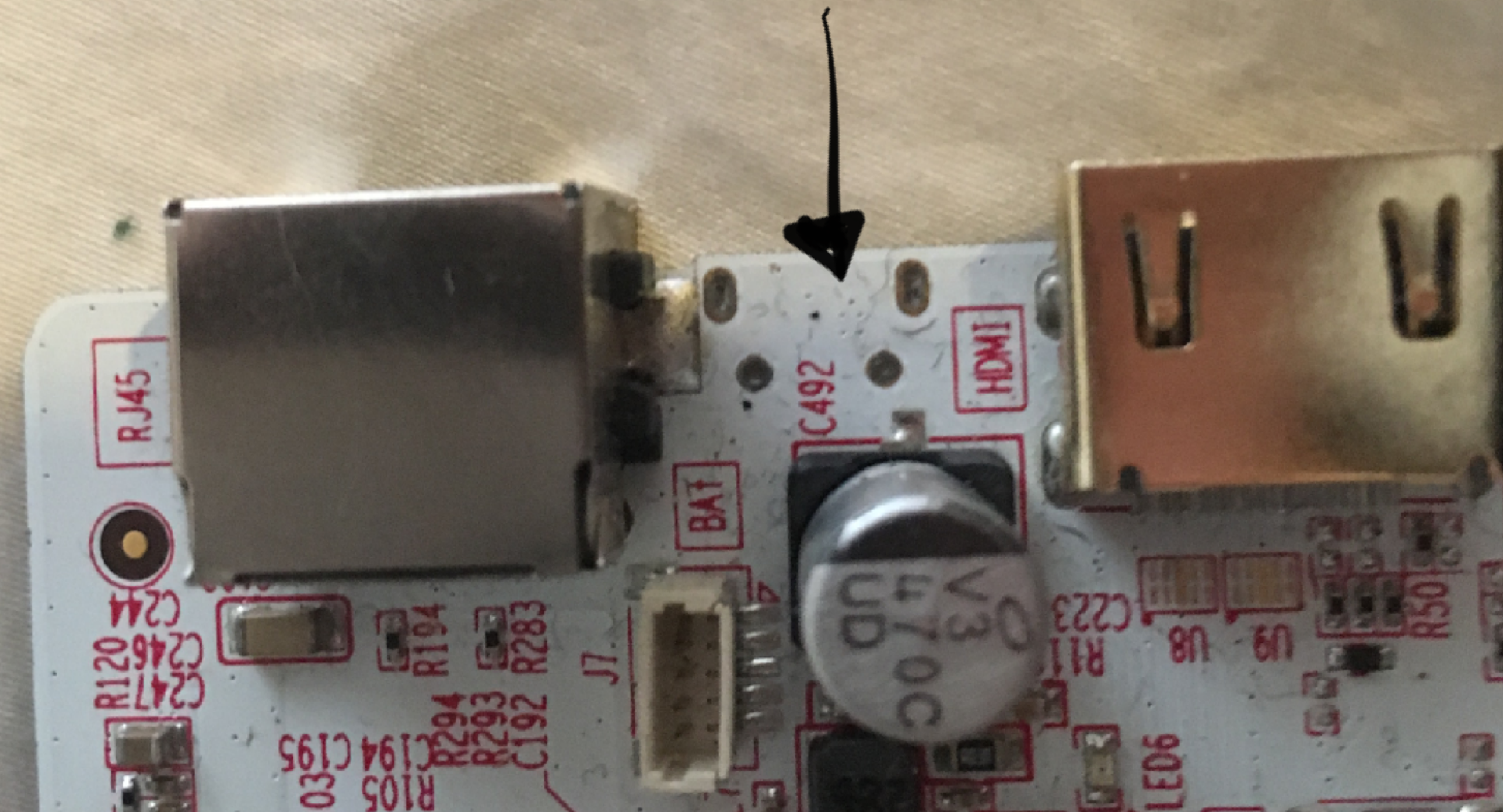
Solder burns on kitchen counter.

… and then what happened?

A USB power connector lived here

… and then what happened?

Another USB power connector lived here



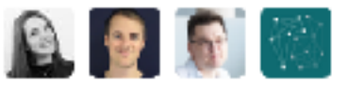
matt northam ™
@mattnortham

Follow

Moment of silence for the bouncy cuddly server. She saw things we could only dream of. #rip #redev15

Kasia Mrowca @MrowcaKasia
Throwing compute around... Cool computer case @holly_cummins #redev15

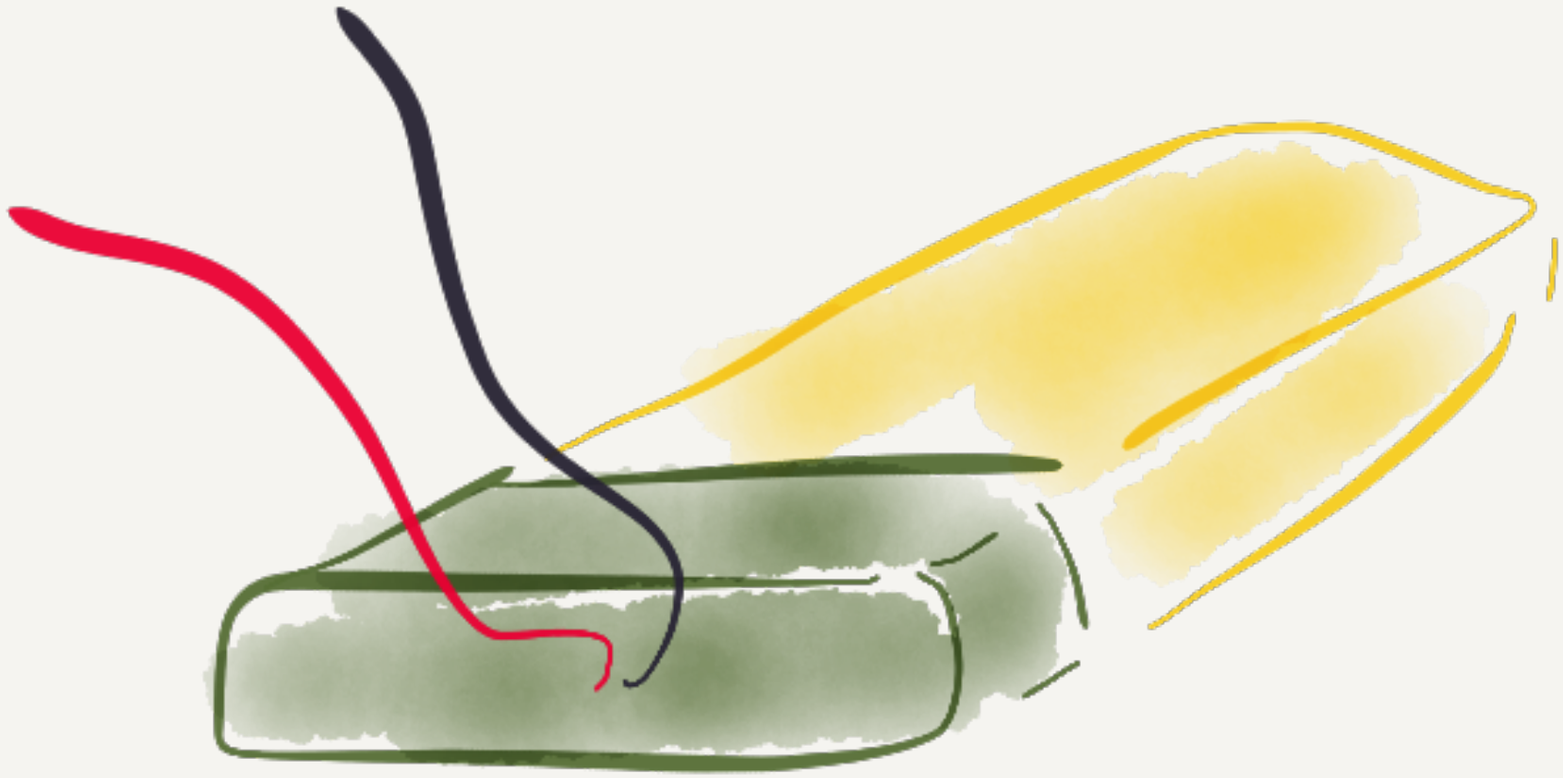
RETWEETS 3 LIKES 2



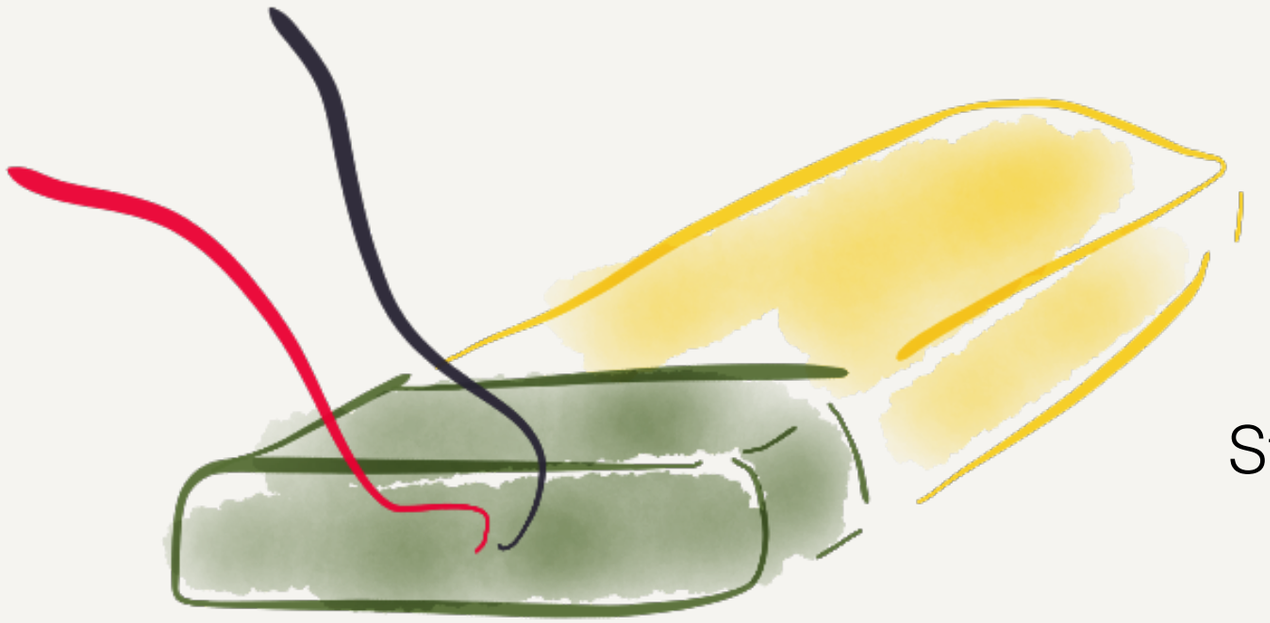
8:49 AM - 14 Aug 2015

3 2

It’s ok! I wired in a battery.

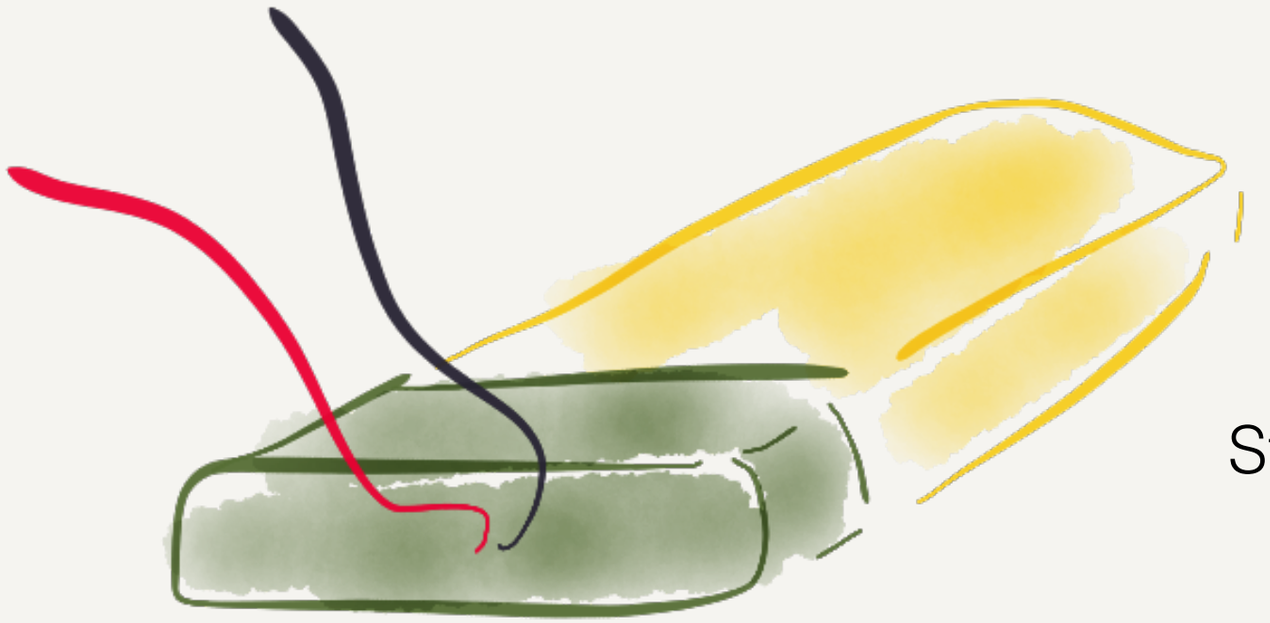


… and then what happened?



LiPoly battery.
Standard 3.3V output.

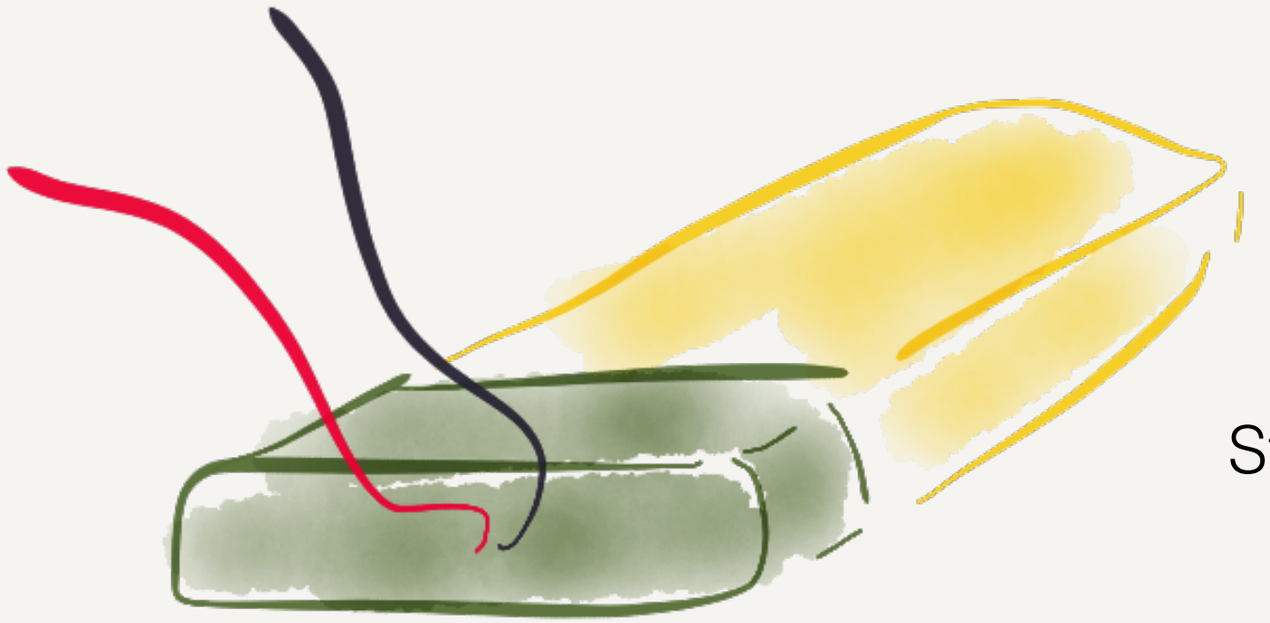
… and then what happened?



LiPoly battery.
Standard 3.3V output.

Battery voltage isn't enough for LEDs.

… and then what happened?



LiPoly battery.
Standard 3.3V output.

Battery voltage isn't enough for LEDs.

Or sensors.

What does that mean in practice?

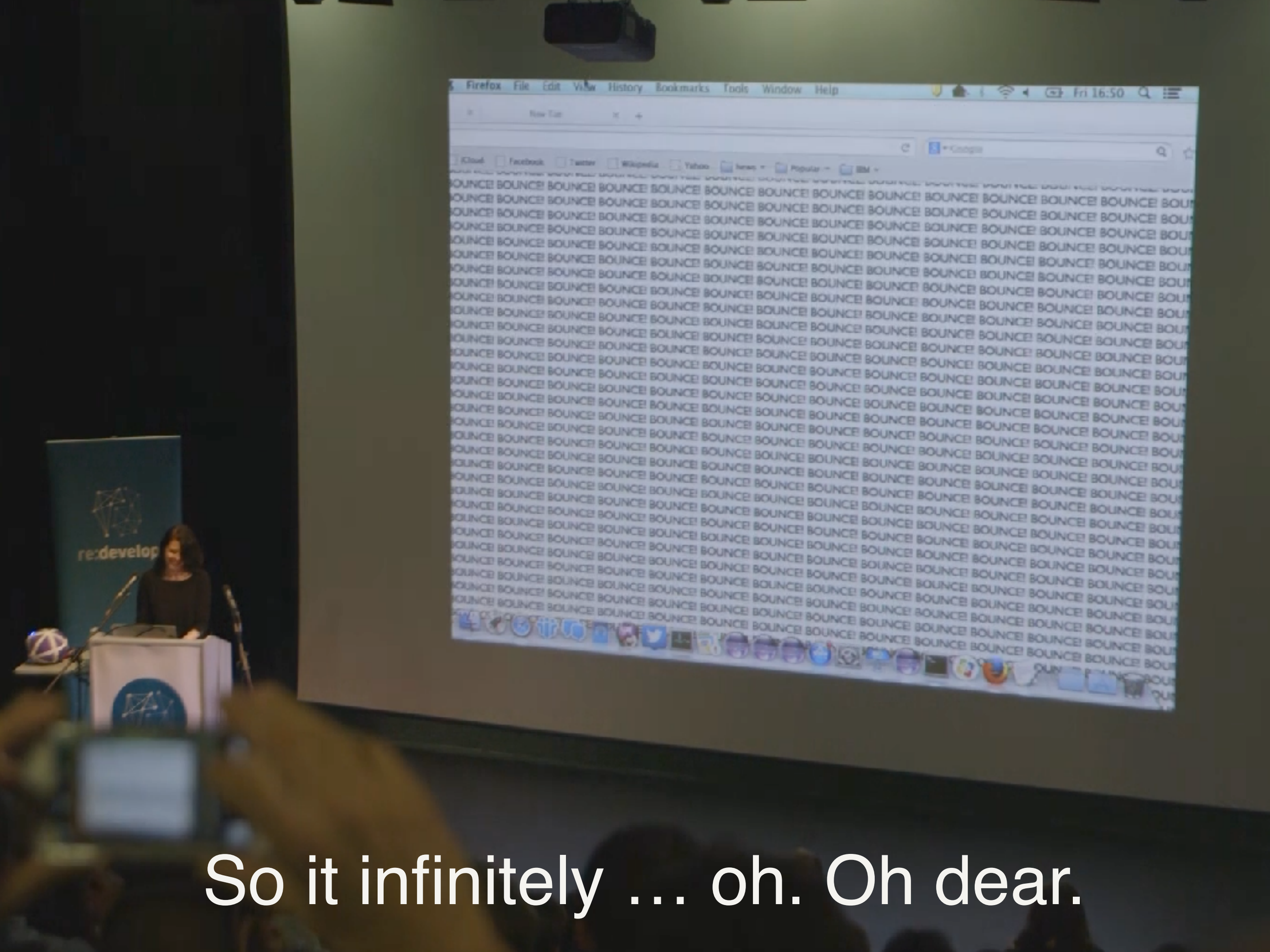
Normally, 0 = bounce.

What does that mean in practice?

Normally, 0 = bounce.

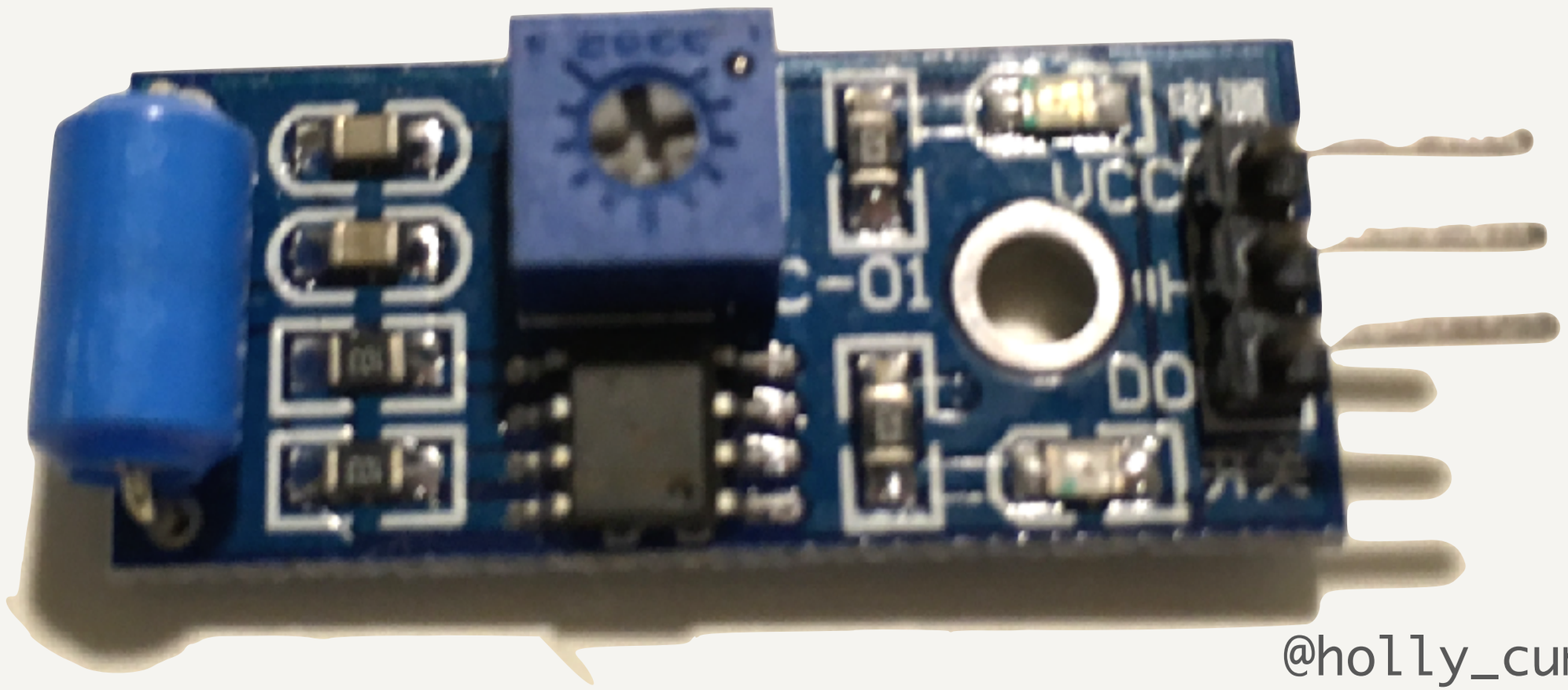
With insufficient voltage, pin is always 0.

What does that mean in practice?

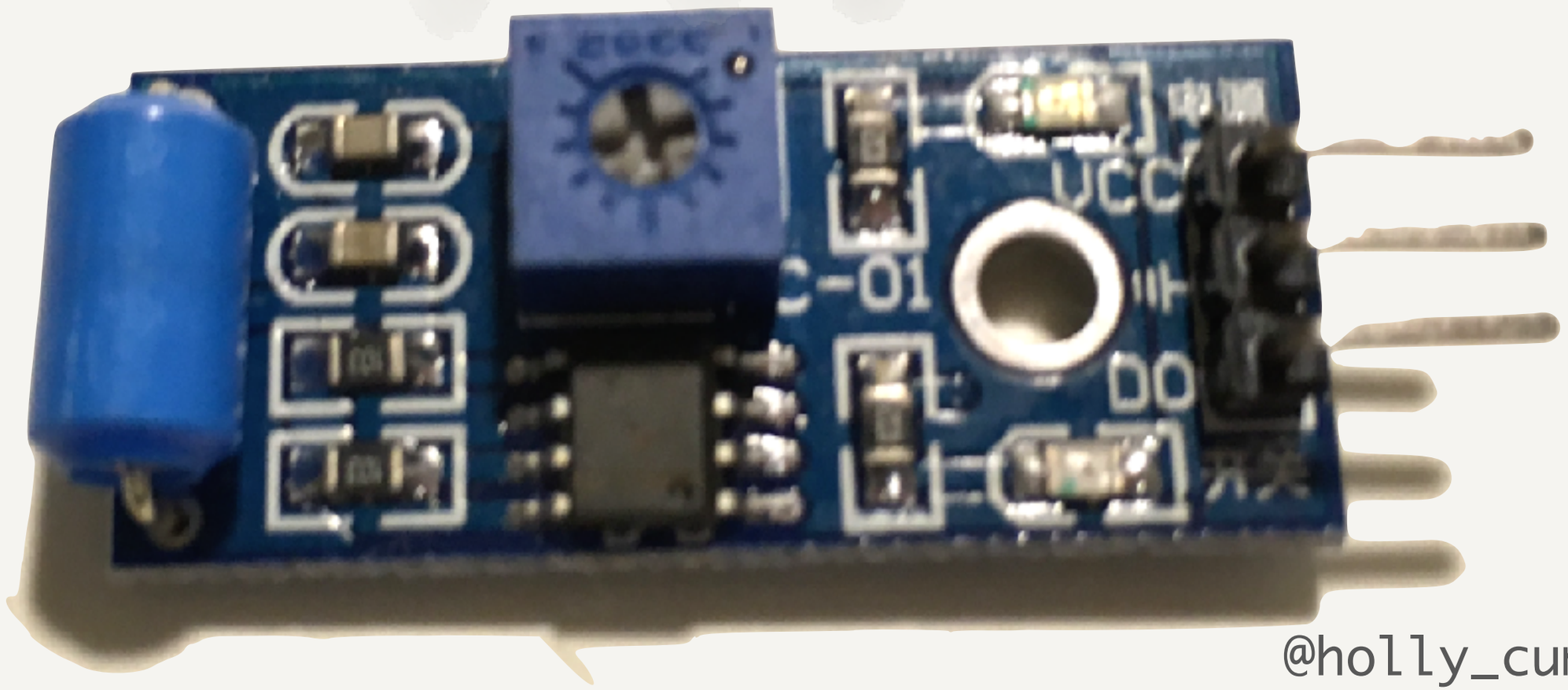


So it infinitely … oh. Oh dear.

… and then what happened?



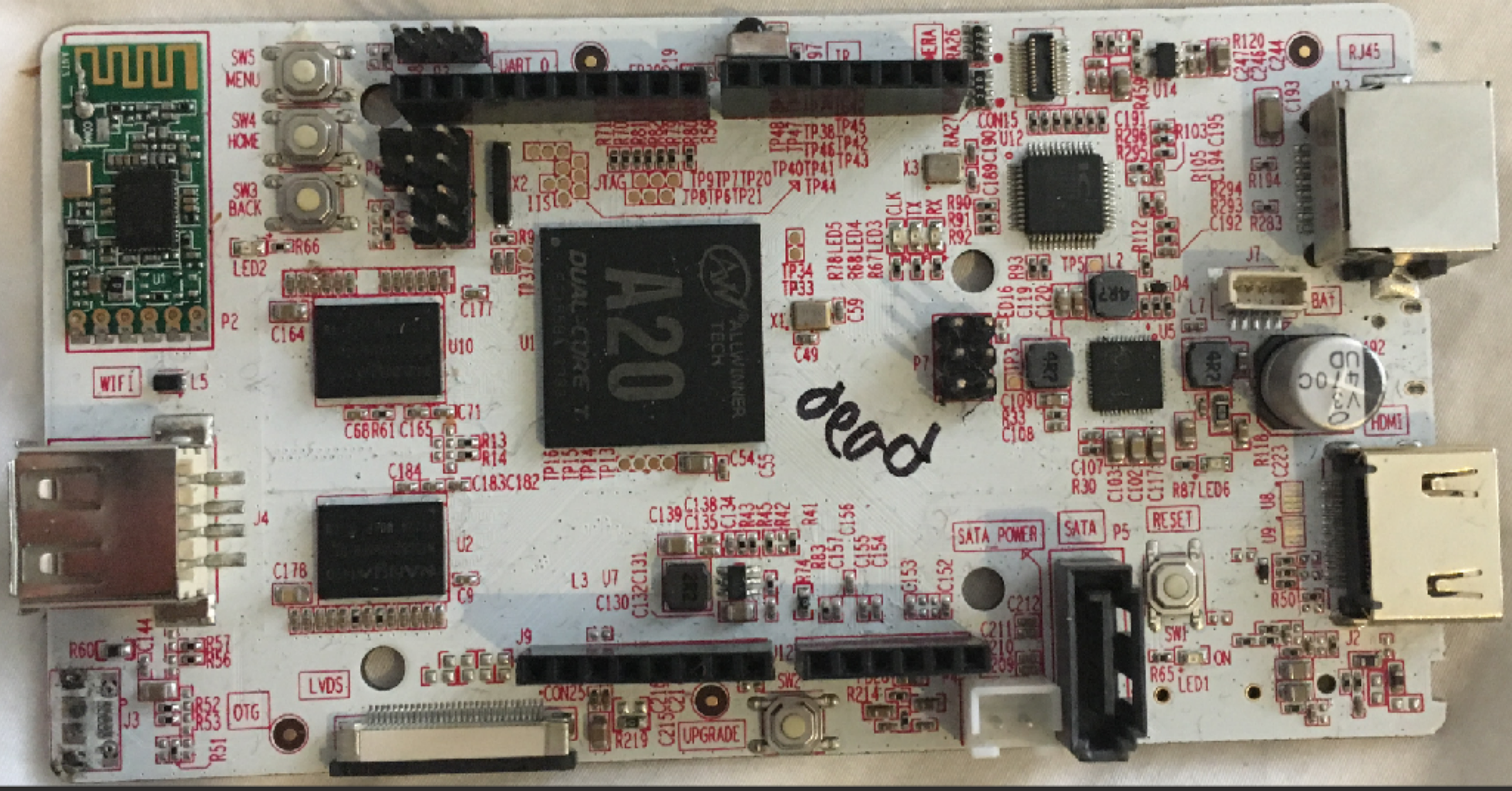
… and then what happened?



… and then what happened?

Motion sensor started smoking, stopped working.

Had to buy a new one.



… and then what happened?

pcDuino stopped working.

Had to buy a new one :(

“Holly, I saw a video of your sphere talk.

I thought you handled the fact that the demo failed really well.

Are there any videos where it actually works?”

–My mother

… and then what happened?

… and then what happened?

It **worked** faultlessly.

Twice in a row.

… and then what happened?

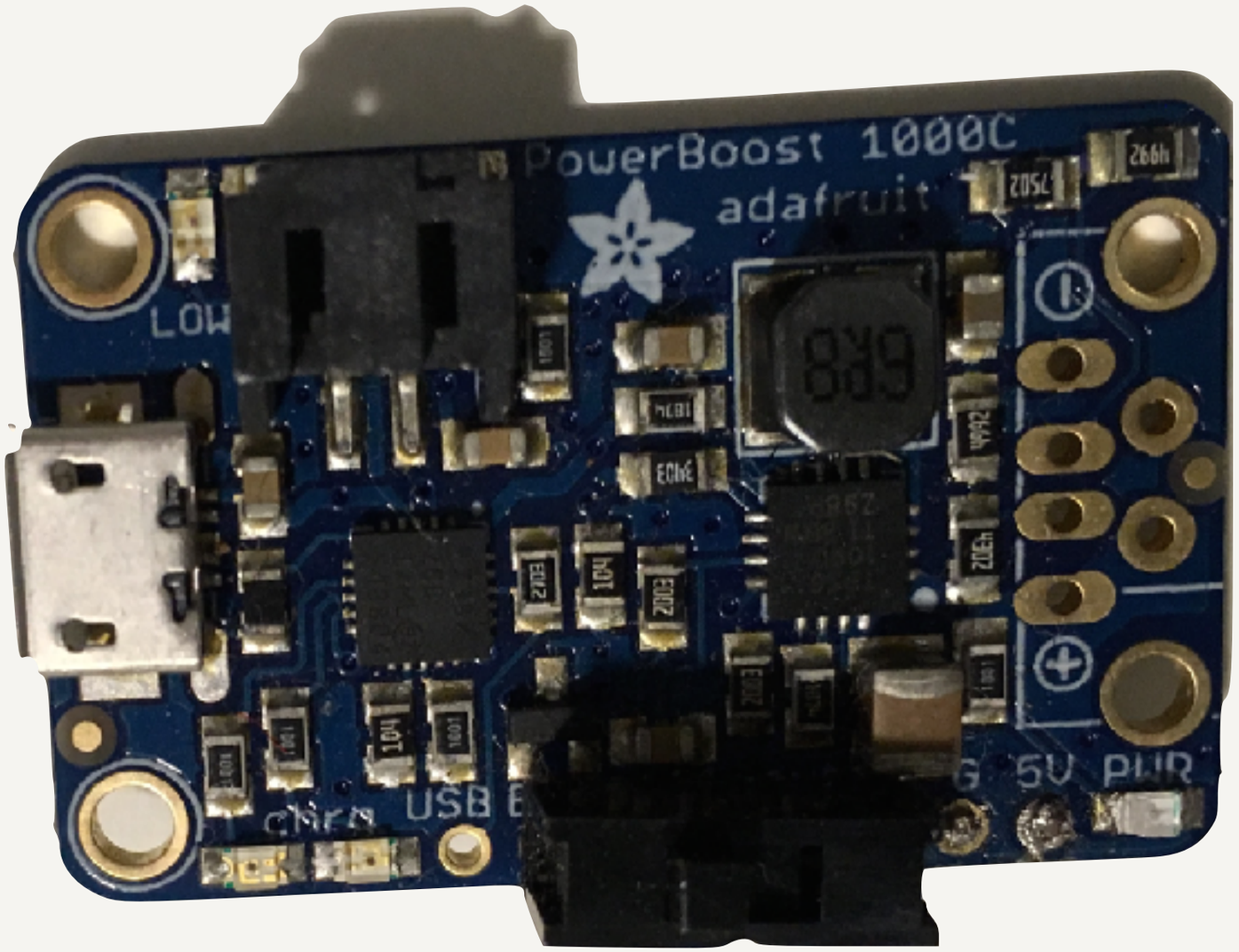
… and then what happened?

****
PROPERTY IRREGULARITY REPORT
ADRIA AIRWAYS / HANDLED BY TALLINN AIRPORT
AIRPORT TALLINN - ESTONIA
MON-FRI 08:00-01:00, SAT-SUN 10:00-01:00
PHONE: +372 6 058 313
E-MAIL: LOST/D/FOUND/A/TLL/D/AERO

FILE REFERENCE	- TLLJP11363/09JUN16/1448GMT
NAME	- CUMMINS/
TITLE/INITIALS	- MSHOLLY/HC/
FLIGHT/DATE	- BA2760/09JUN/JP7174/09JUN/
NUMBER OF BAGS	- 1
TICKET NUMBER	- ETKT
COLOUR/TYPE	- BK22HWX
TAG NUMBER	- BA6O2925/

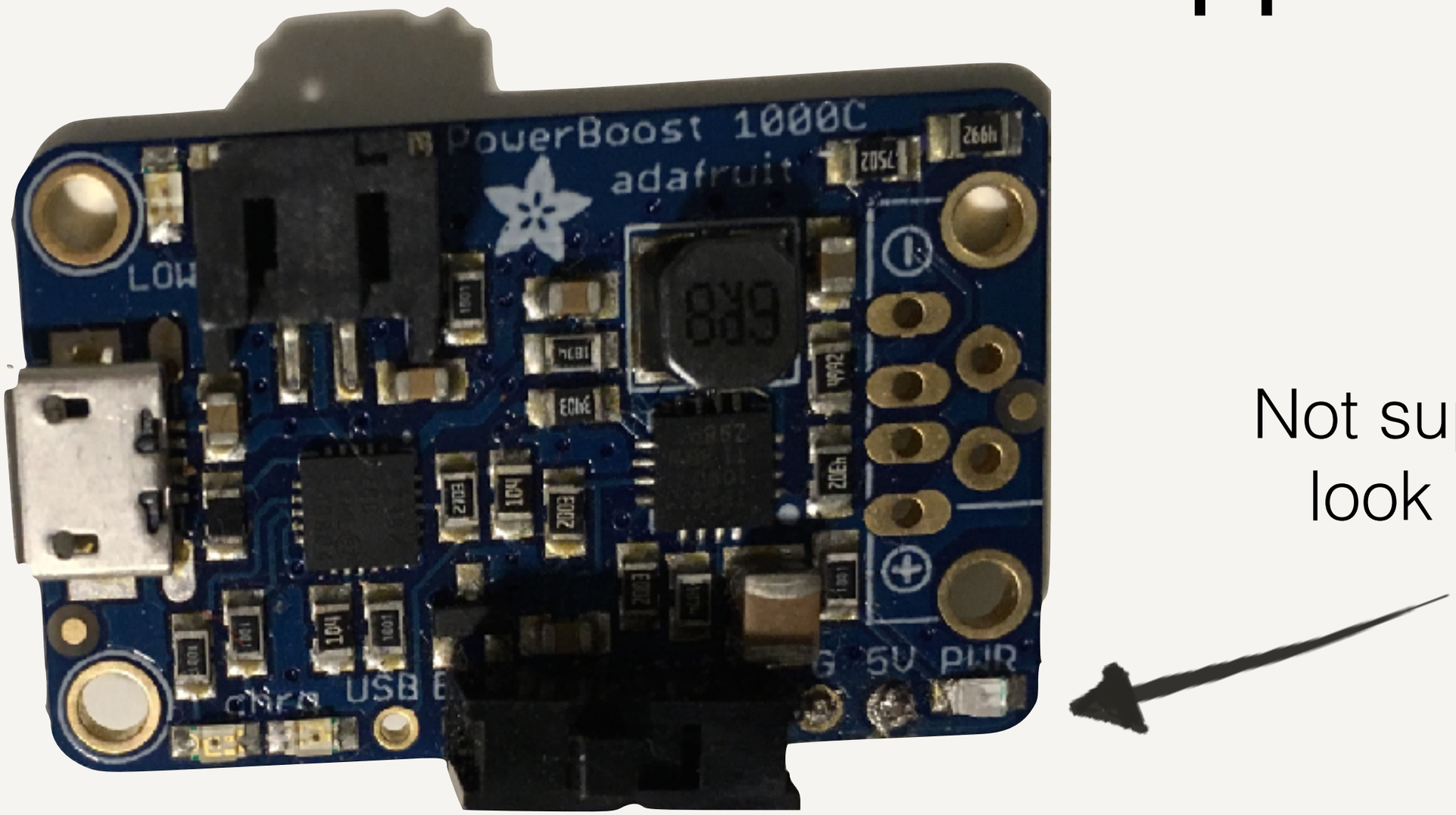
PLEASE RETAIN PASSENGER TICKET AND BAGGAGE CHECK. THIS REPORT DOES NOT INVOLVE ANY ACKNOWLEDGEMENT OF LIABILITY.
>

… and then what happened?



Not supposed to look like that.

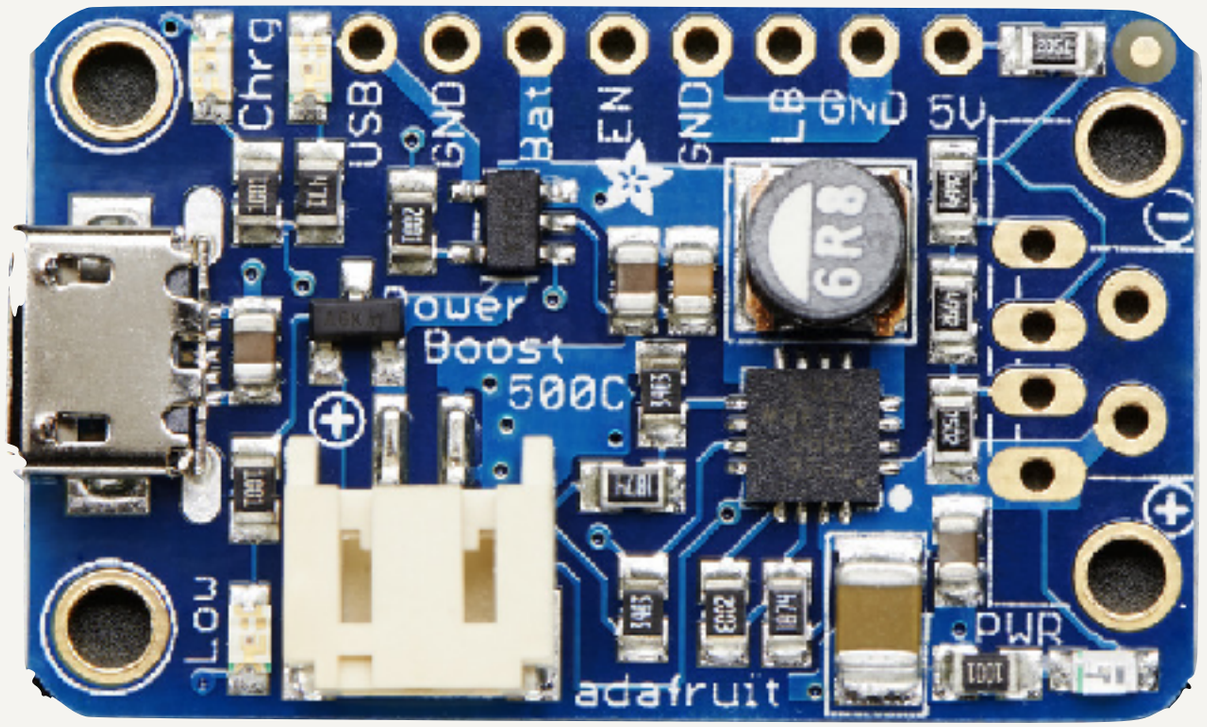
… and then what happened?



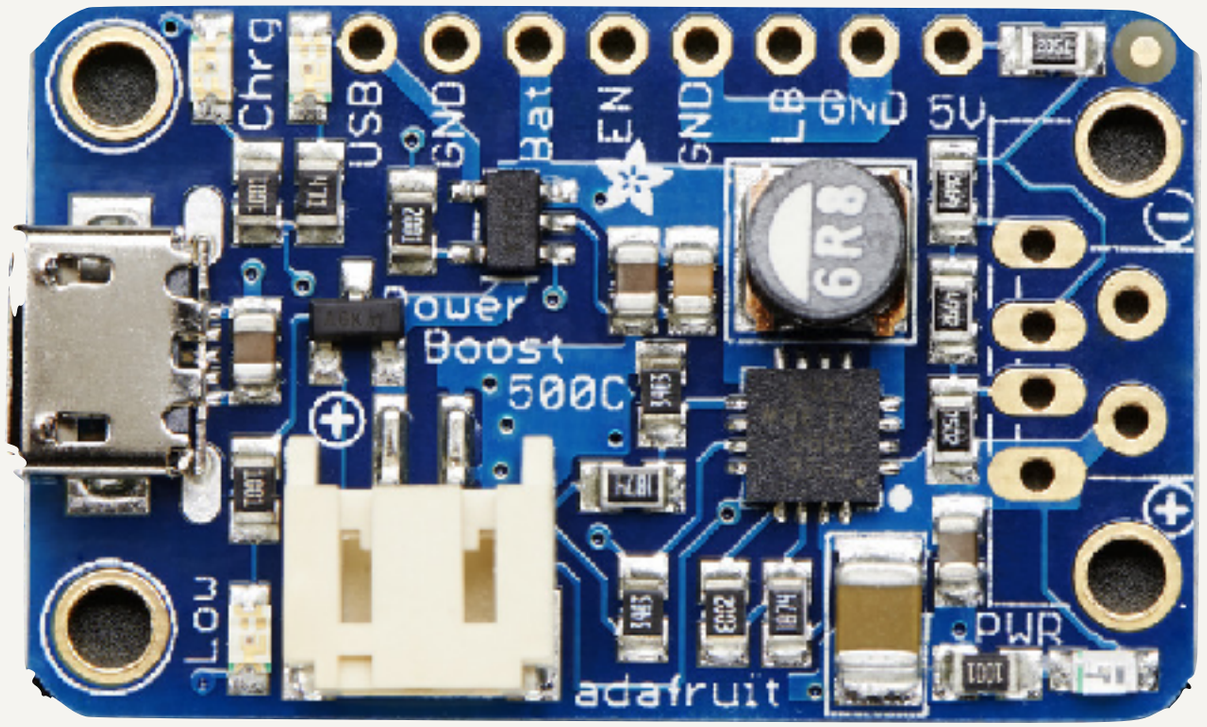
Not supposed to look like that.

Pin on power board snapped.
Remnants of pin in PCB hole.

… and then what happened?



… and then what happened?



I did something wrong soldering the switch on the replacement.

I have not failed.
I've just found 10,000 ways that won't work.

–Thomas Edison

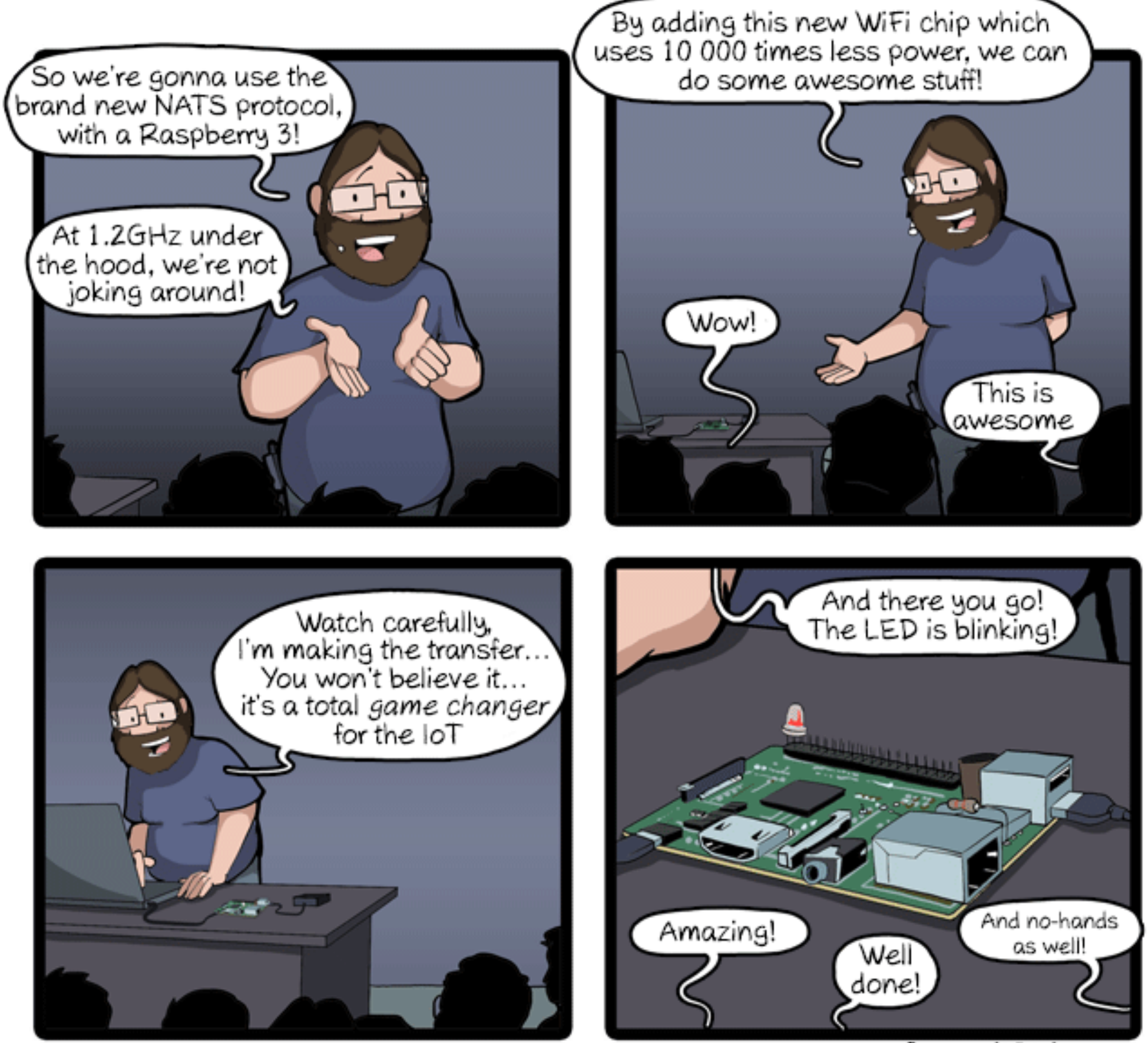
holly's tips for building stuff

holly's tips for building stuff

Being an innovator isn't easy.

holly's tips for building stuff

Being an innovator isn't easy.
(and we're all innovators!)



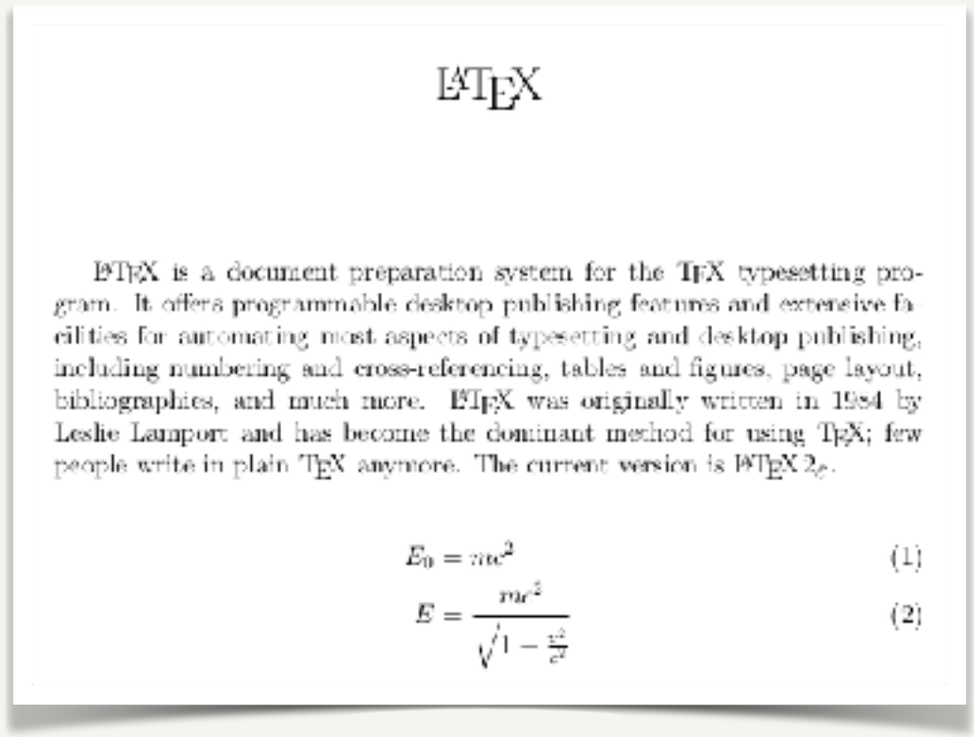
http://www.commitstrip.com/en/2016/05/26/the-internet-of-things-a-revolution/

“Holly, most of your demos are doing something really simple in a complicated way.”

–My partner

holly's tips for building stuff

Just because it isn't easy, doesn't mean it's valuable.



LaTeX

LaTeX is a document preparation system for the TeX typesetting program. It offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout, bibliographies, and much more. LaTeX was originally written in 1984 by Leslie Lamport and has become the dominant method for using TeX; few people write in plain TeX anymore. The current version is LaTeX 2_ε.

$$E_0 = mc^2 \tag{1}$$

$$E = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}} \tag{2}$$

Markus Eisele
@myfear

Following

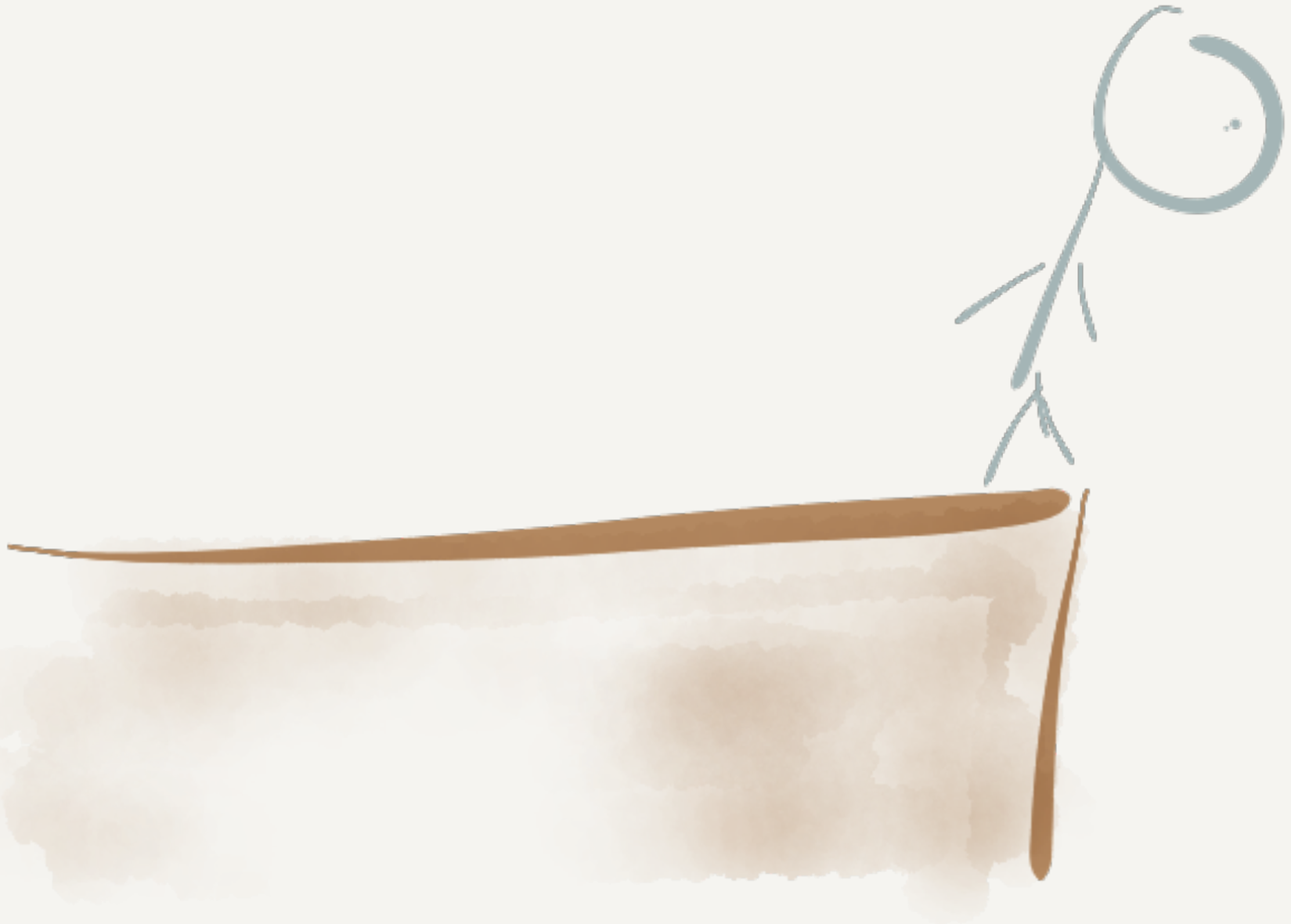
"Don't cling to a mistake just because you spent a lot of time making it."
Unknown
#qotd

RETWEETS 8 LIKES 10

11:53 PM - 6 Jul 2016

Markt Schwaben, Deutschland

8 10

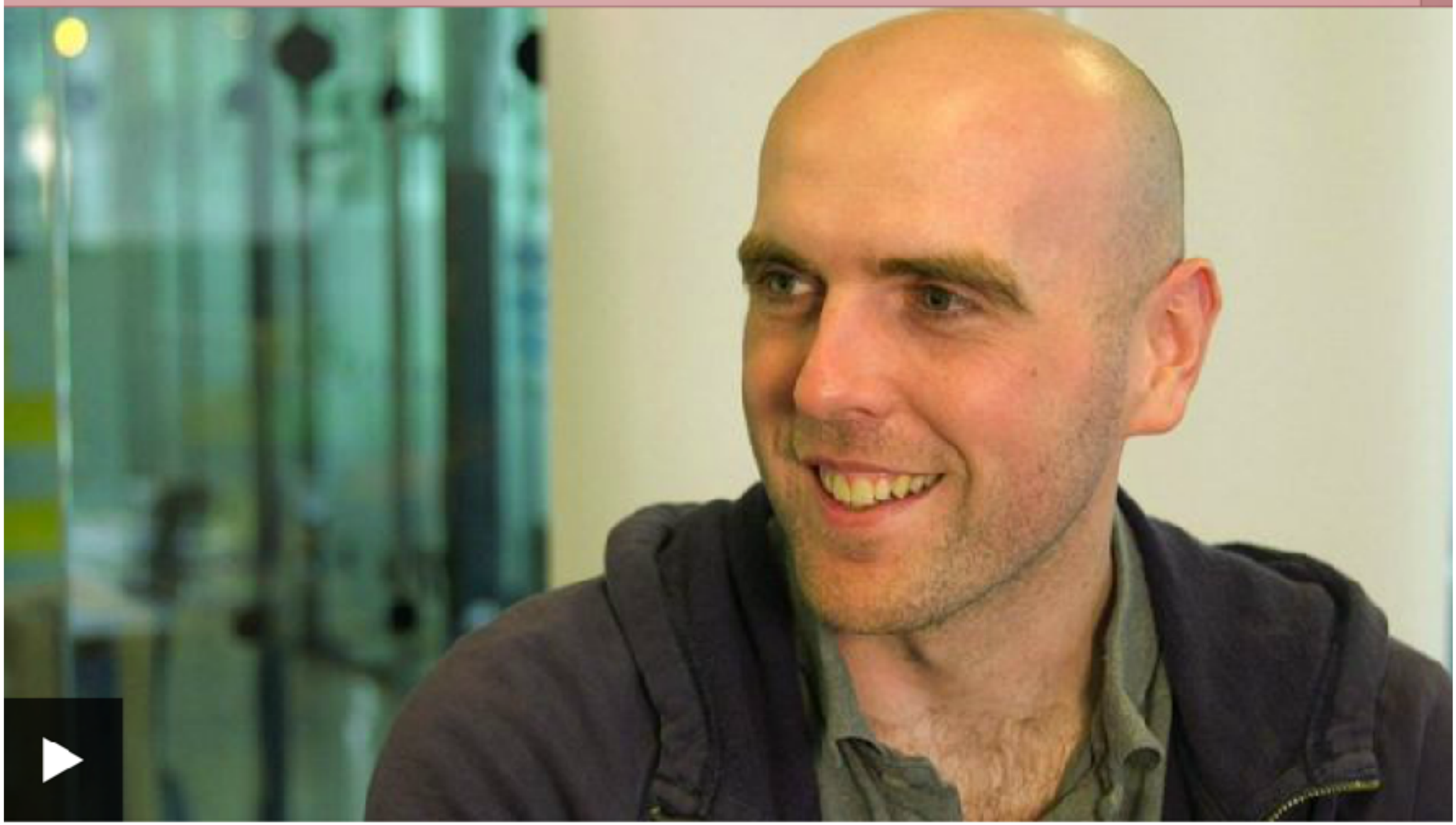


Know when to stop.

Feedback

2016

www.bbc.co.uk/news/technology-35312976



Simon Wheatcroft runs blind with help of a phone app

18 May 2016 Last updated at 00:00 BST

www.cnbc.com/2016/05/03/this-blind-man-is-running-a-1

CNBC PRO WATCHLIST

This blind man is running a 155 mile ultra-marathon with the help of an IBM app

1.6k SHARE

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Arjun Kharpal | @ArjunKharpal
Tuesday, 3 May 2016 | 8:27 AM ET

CNBC

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Simon Wheatcroft is completely blind. But that's not going to stop him running a 250 kilometer (155.3 mile) race in the desert.

FROM THE WEB Sponsored Links by Taboola

“I’m going to do the 4 deserts run. I’ll have to run though bleeding blisters, deal with toenails falling off, and I’ll be vomiting - in the best case.”

— Simon Wheatcroft

EE 4G
08:06
eAscot
carter's
Phone
Safari
Mail
Music

How do we measure value?

holly's tips for building stuff

Value isn't always measured in hryven'

holly's tips for building stuff

Value isn't always measured in number of users

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Simon Wheatcroft runs blind with help of a phone app

16 May 2016 Last updated at 00:00 BST

Simon Wheatcroft has been blind since the age of 17 but has refused to let his lack of sight prevent him taking part in his great passion for running.

Wheatcroft did not let his blindness affect his life but is rather using the power of mobile applications in the modern world to achieve his goal. In the past one year, he had entered into a partnership with IBM to develop an app which would help him during his runs. The app would help notify him of any possible obstacles and keep him on pace with the rest.

Blind ultra working on an ap

People

using

which would help him during his

RINGLY

In Technology

Here's why Digital India is dying

4 days ago

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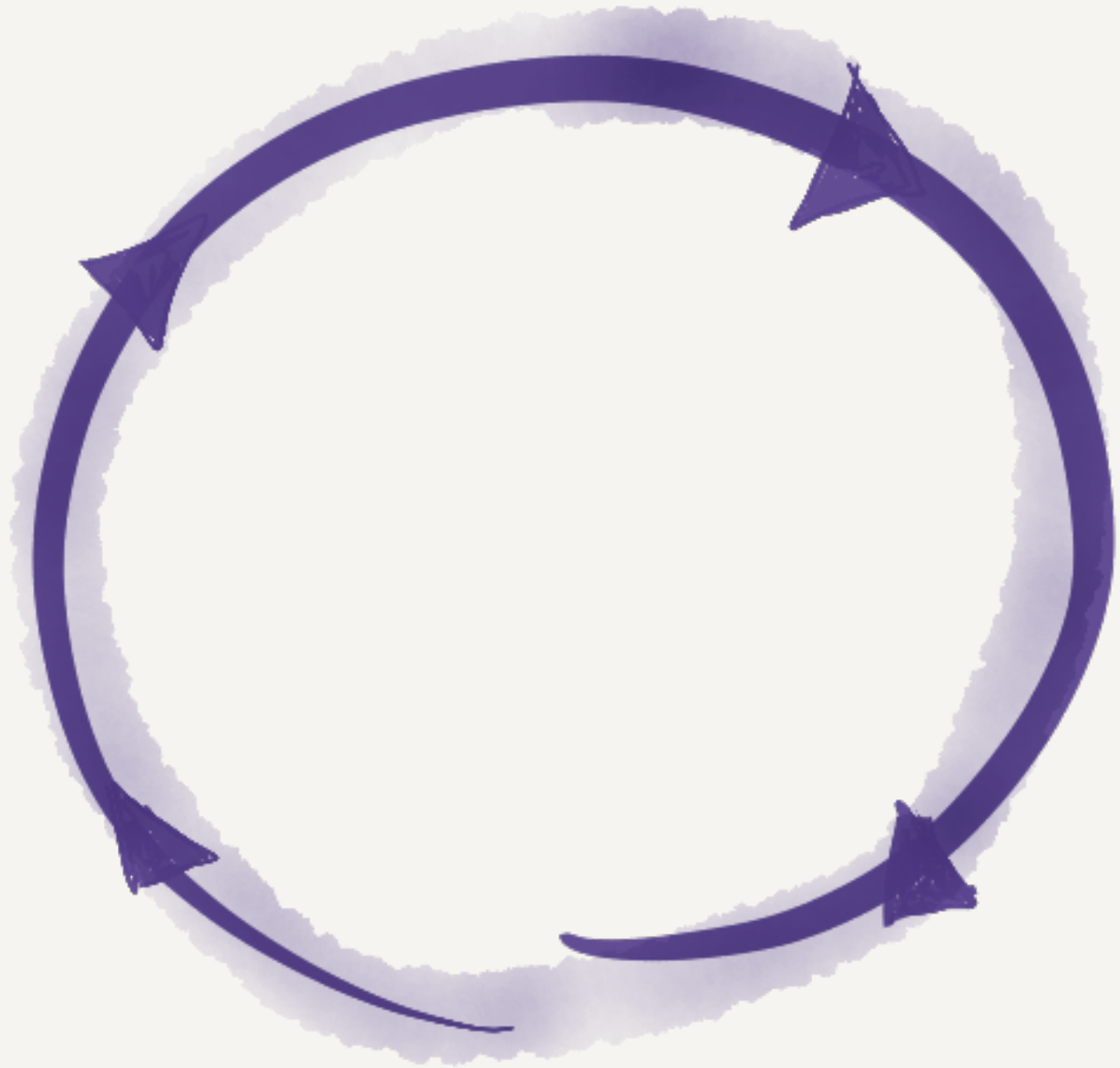
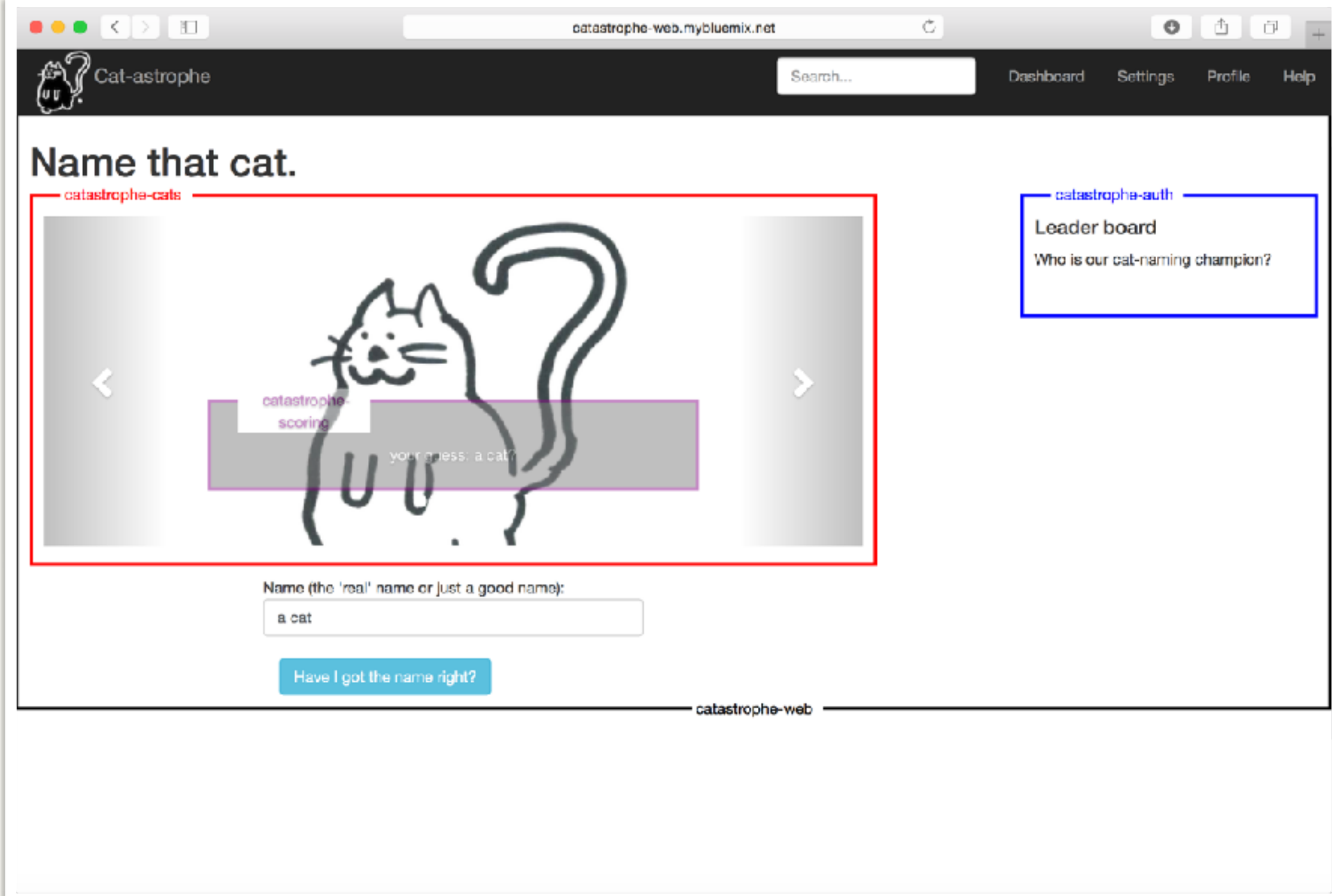


Are we lone geniuses?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Dashboard
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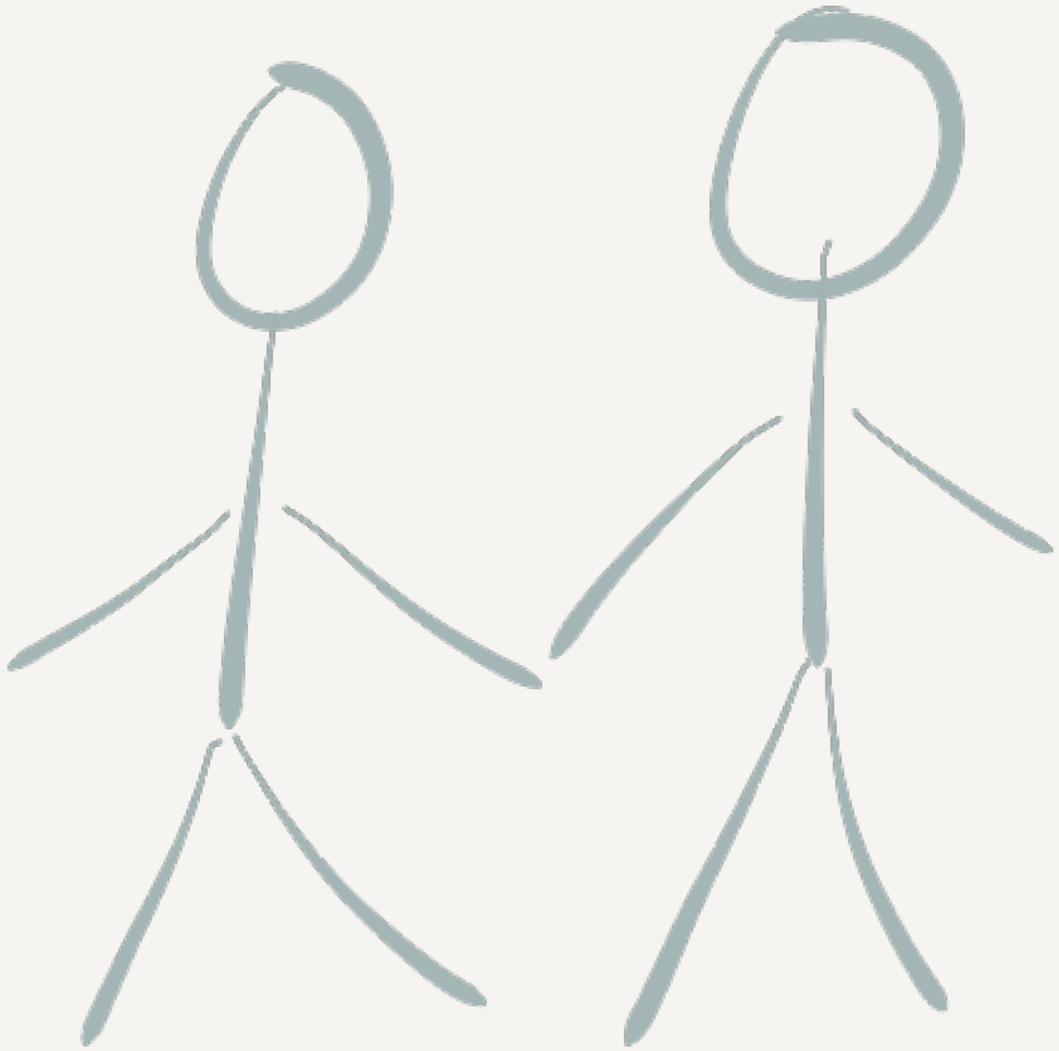
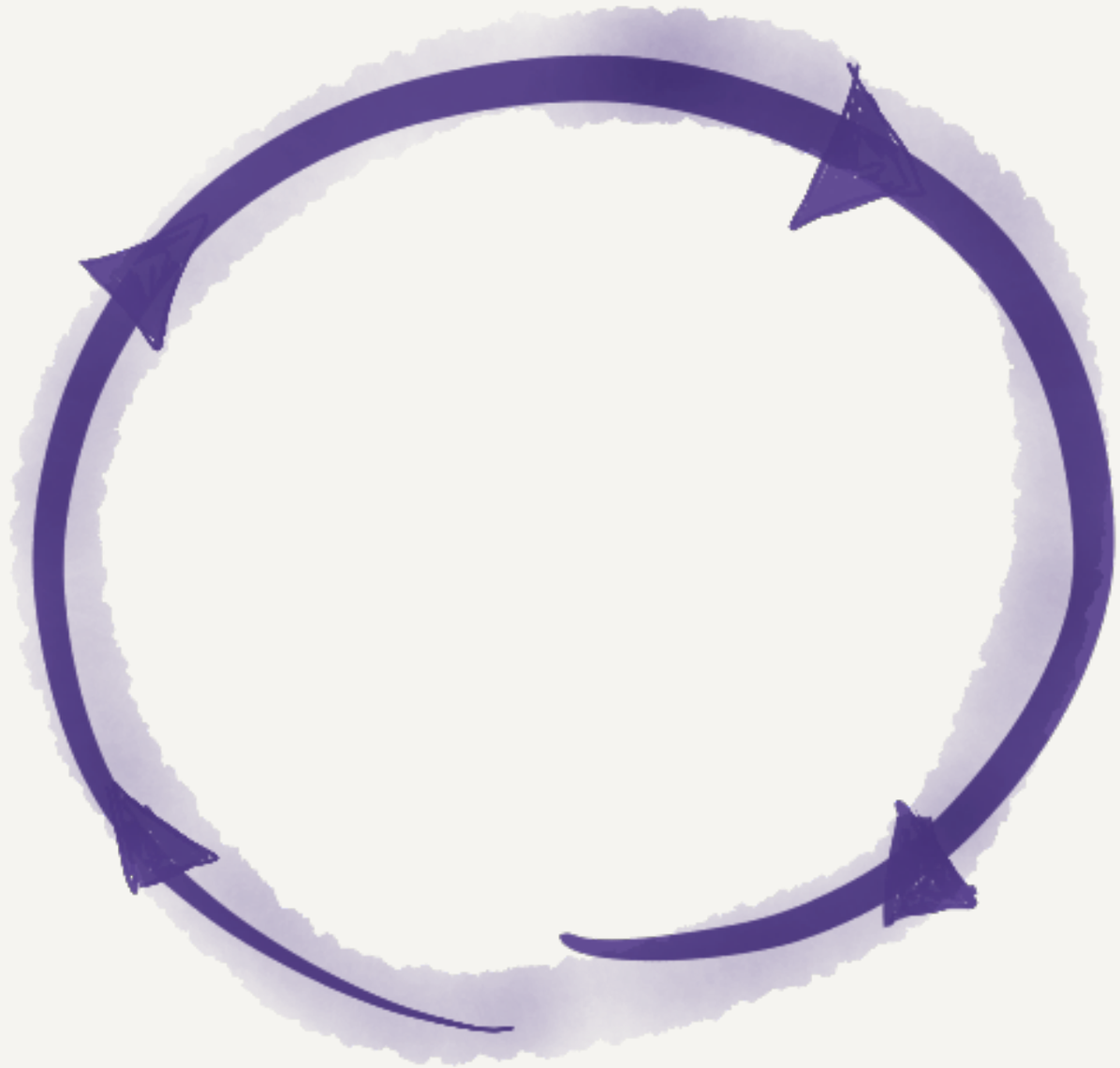
Help
Name that cat.
catastrophe-cats
catastrophe-scoring
your guess: a cat?
catastrophe-auth
Leader board
Who is our cat-naming champion?
Name (the 'real' name or just a good name):
a cat
Have I got the name right?
catastrophe-web





Bus number

Number of developers who can be run over by a bus before critical knowledge is lost

“Code is not an asset … it’s a liability.”

–Alan Cooper, 2005

The IBM Bluemix Garage
Method
3M

holly's tips for building stuff

Find a friend.

Work with them.

Better yet, find several friends.

Let’s talk about tools.

Simon Haslam @simon_haslam 1d

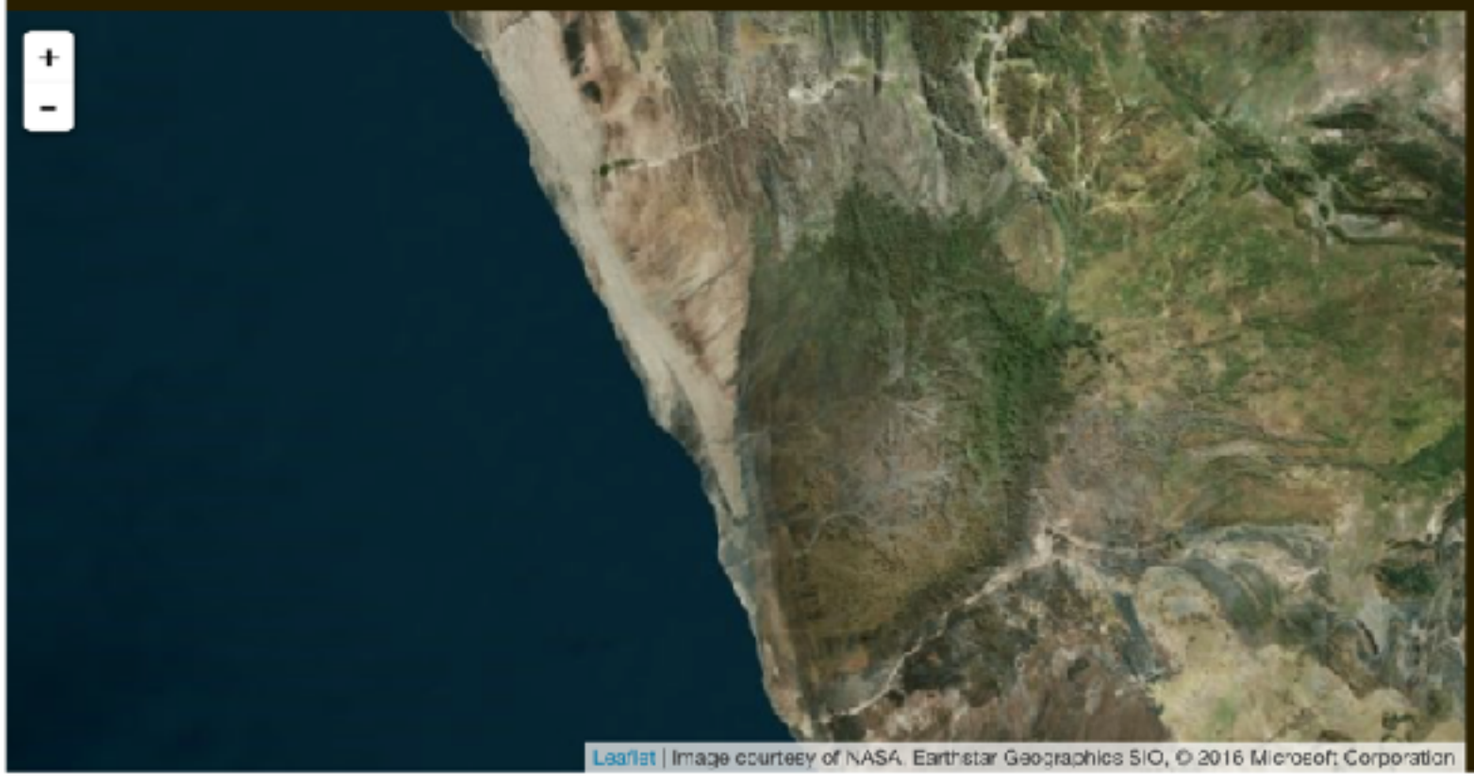
@holly_cummins You could do with a finer tipped soldering iron, no? That one looks like a screwdriver :D

“How hard can an offline data push be?”

–Me

followsimon.mybluemix.net

Progress



Stages

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6

About Simon

followsimon.mybluemix.net

Progress

Simon's route was supposed to be shown here :(

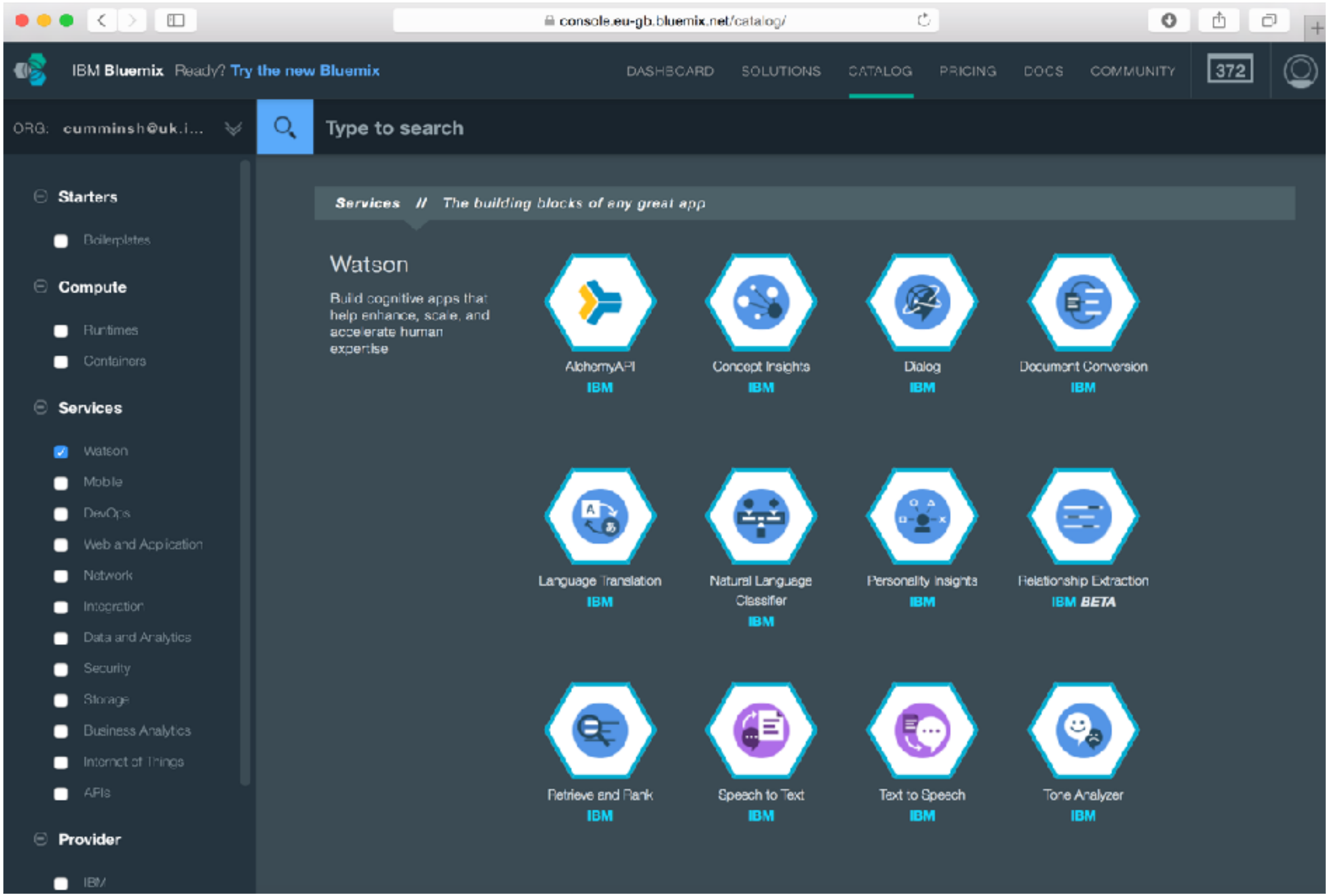
Leaflet | Image courtesy of NASA, Earthstar Geographics SIO, © 2016 Microsoft Corporation

Stages

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6

About Simon

There is no devops in the desert.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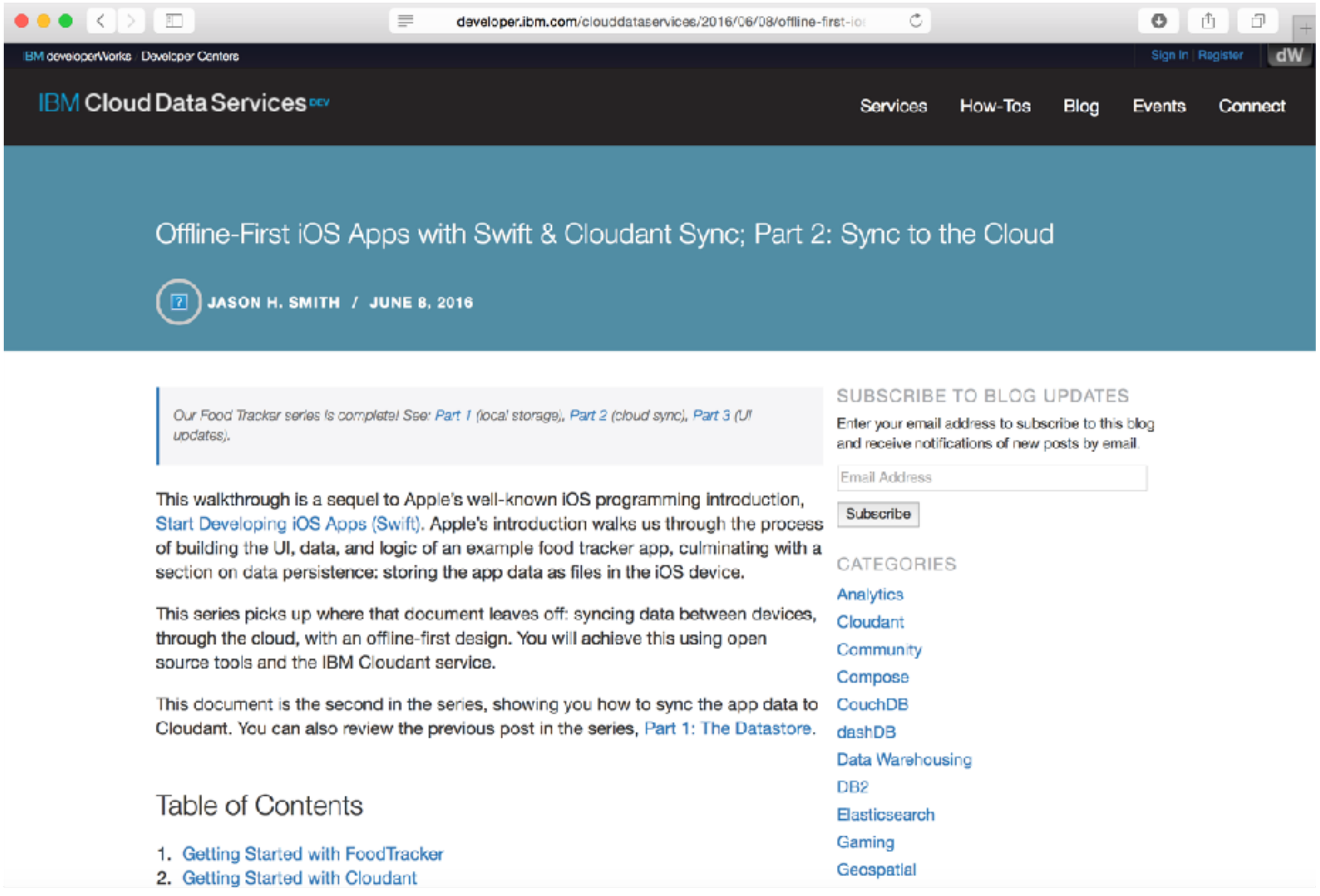
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Offline-First iOS Apps with Swift & Cloudant Sync; Part 2: Sync to the Cloud
JASON H. SMITH / JUNE 8, 2016
Our Food Tracker series is complete! See Part 1 (local storage), Part 2 (cloud sync), Part 3 (UI updates).
This walkthrough is a sequel to Apple's well-known iOS programming introduction, Start Developing iOS Apps (Swift). Apple's introduction walks us through the process of building the UI, data, and logic of an example food tracker app, culminating with a section on data persistence: storing the app data as files in the iOS device.
This series picks up where that document leaves off: syncing data between devices, through the cloud, with an offline-first design. You will achieve this using open source tools and the IBM Cloudant service.
This document is the second in the series, showing you how to sync the app data to Cloudant. You can also review the previous post in the series, Part 1: The Datastore.
Table of Contents
1. Getting Started with FoodTracker
2. Getting Started with Cloudant
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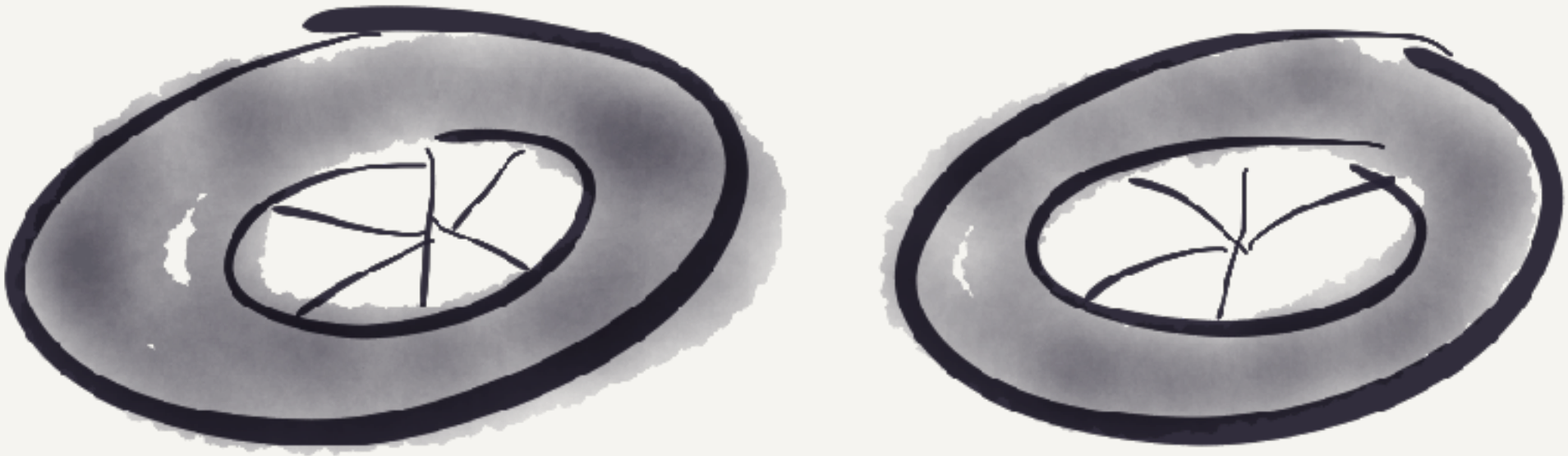


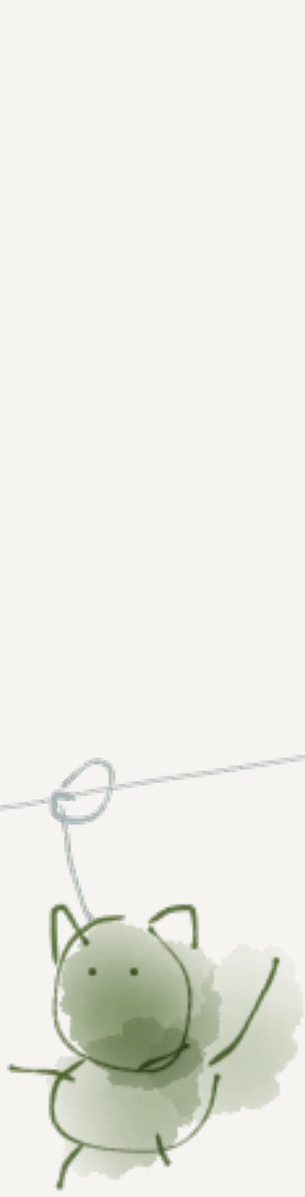
holly's tips for building stuff

Use the tools available to you.

holly's tips for building stuff

Beware not-invented-here syndrome.

Cuddly toy zipwire



Cuddly toy hotel

Cuddly toy zipwire

Cuddly toy hotel

“Just because you can, doesn’t mean you should.”

–Lt. Col. Carlos A. Keasler

As useless as a …

As useless as a …

chocolate teapot.

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TAGS: #Chocolate (14), #Easter Gifts (26), #Gifts for Her (294), #Gifts for Him (414), #

326 0 100

Stewart X Addison @sxaTech 15m

@planetf1 @holly_cummins RFID chip in socks? Seriously? What kind of a ridiculous suggestion is ... Oh

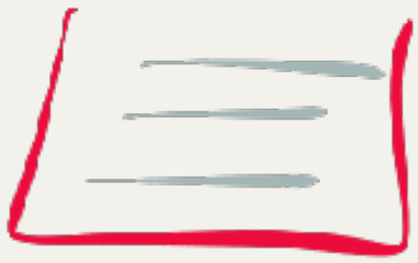
> **Terence Eden** @edent
>
> I'm going to throw away all my socks and only buy BLACKSOCKS©®™
> Of course I need NFC enabled socks.
> youtu.be/ksgObw2dQcE

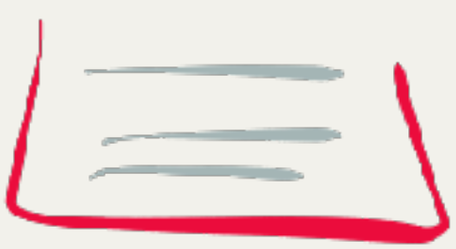
holly's tips for building stuff

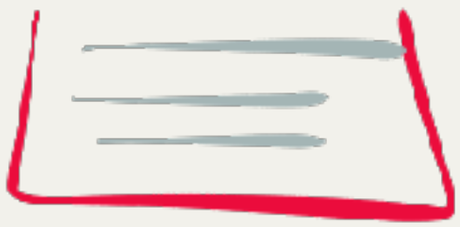
Just because you can,
doesn't mean you should.

Help Desk

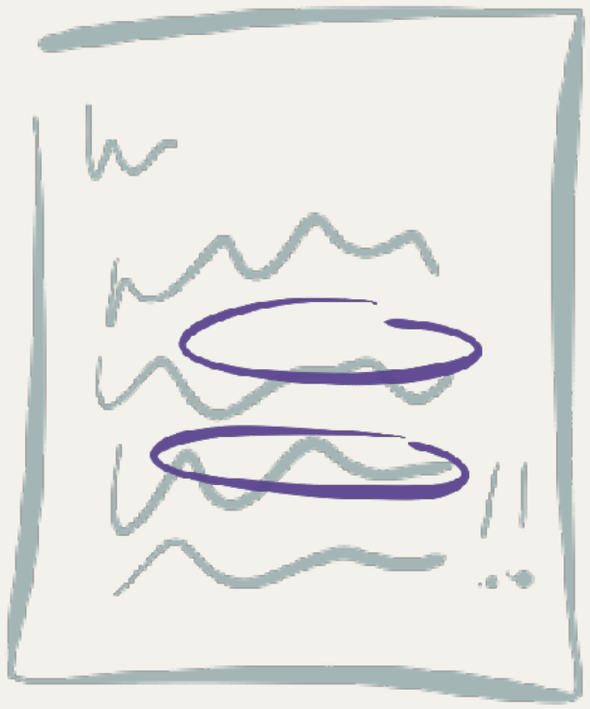
Email



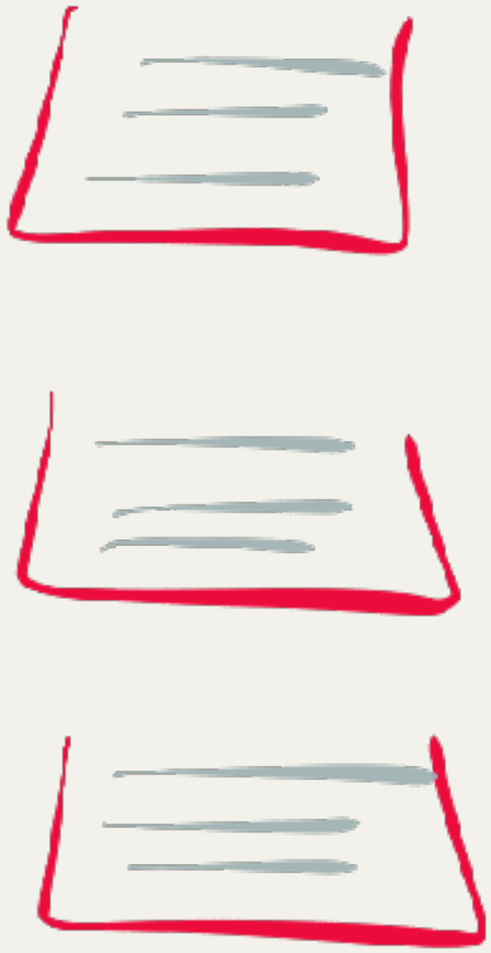




Ticket

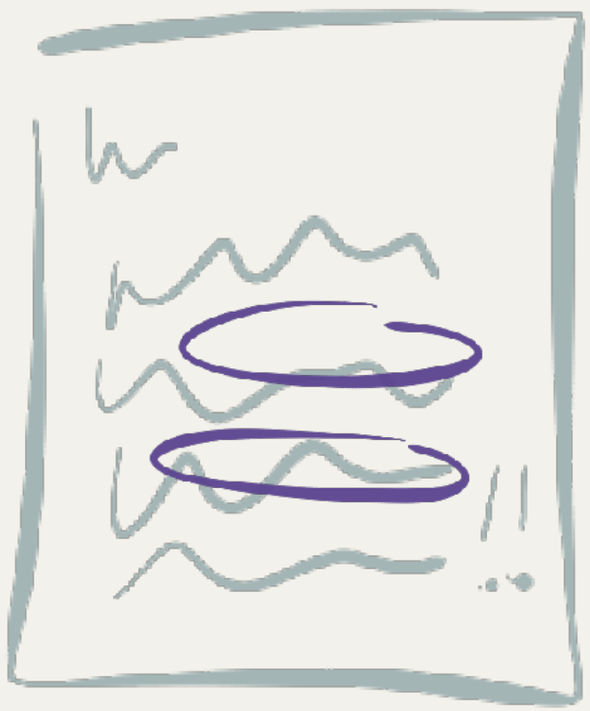


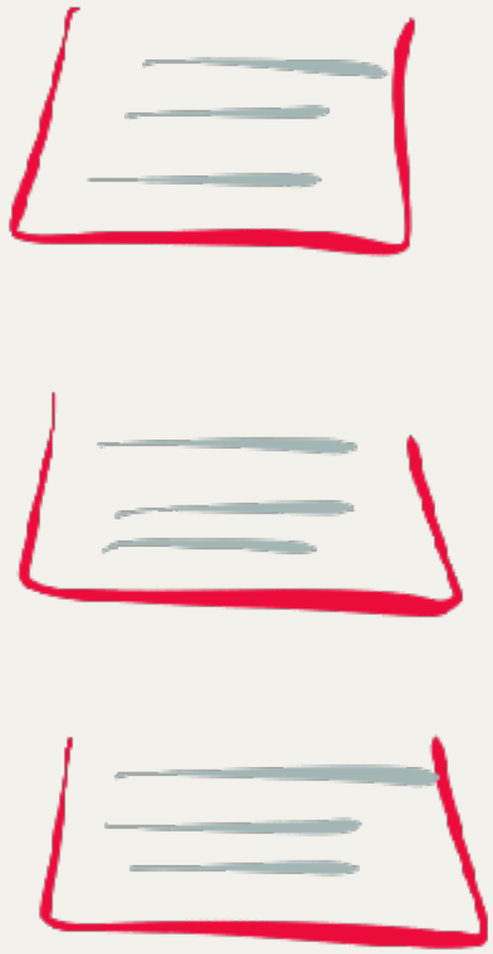
Email



Ticket

?





Email

Ticket

www.ibm.com/watson/what-is-watson.html

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What is Watson?

IBM Watson is a technology platform that uses natural language processing and machine learning to reveal insights from large amounts of unstructured data

Watch now (02:14)

What Watson can do for you

Answer your customers' most pressing questions

Quickly extract key information from all documents

Reveal insights, patterns and relationships across data

@holly_cummins

Hypothesis: Can a computer categorise the emails into the right queue in the ticketing system?

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Minimum Viable Product: Watson categorisation of exported emails + dashboard + metrics

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Cost: Two weeks

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Answer: Yes! It's awesome!

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Next step: Live emails.

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And repeat…

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Lean Startup

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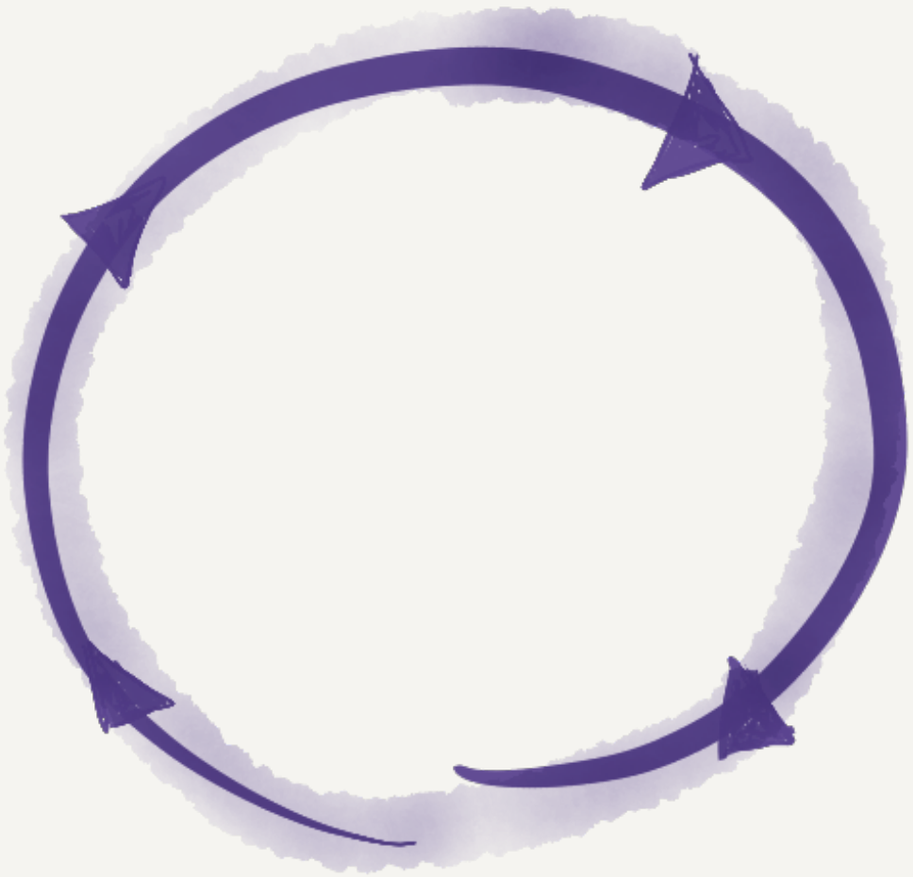


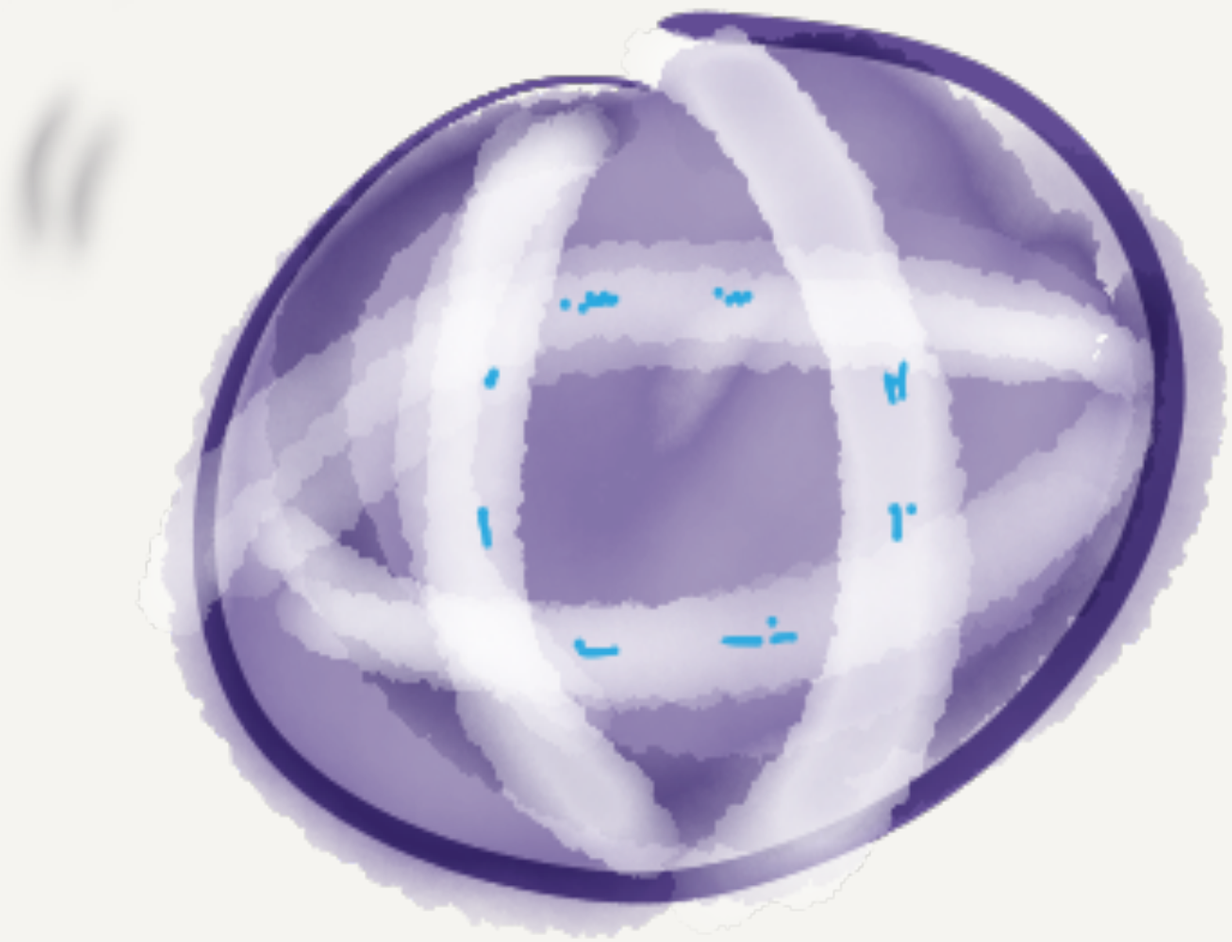
Lean Startup

Does what I built work?

“It worked a second ago, when you weren’t watching, honest!”

–Me

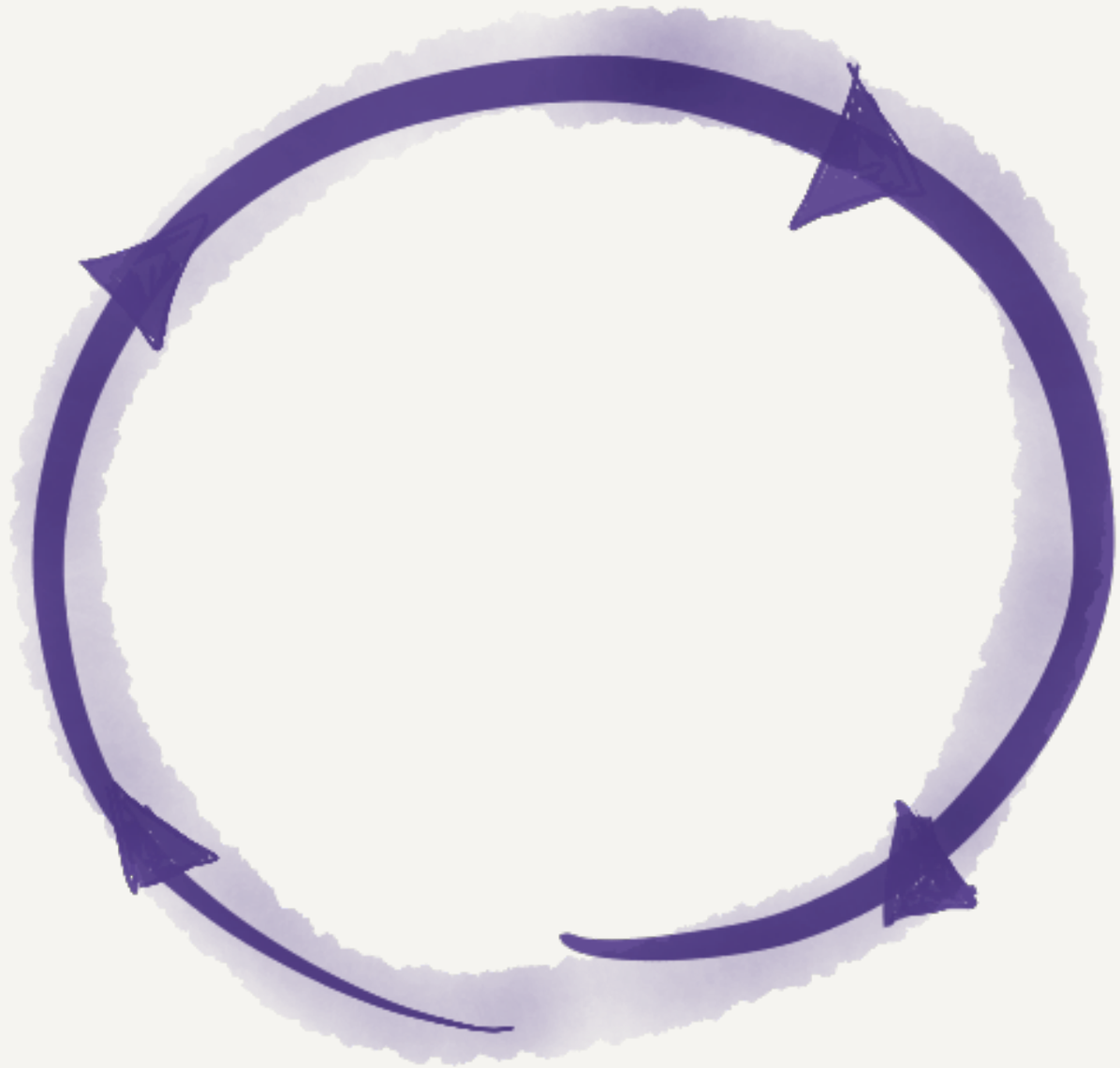
Demo-driven testing.



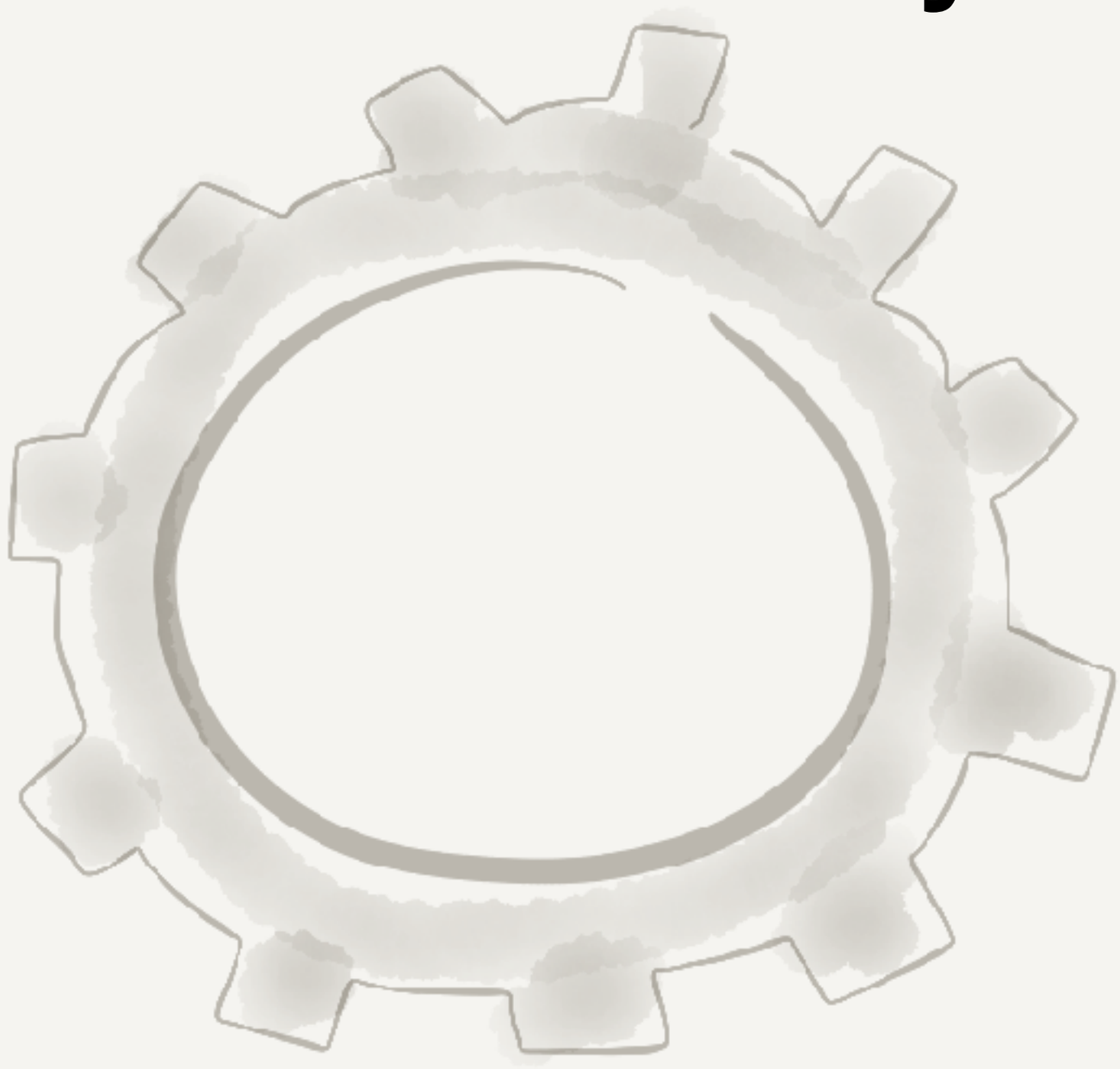
holly's tips for building stuff

Test first.

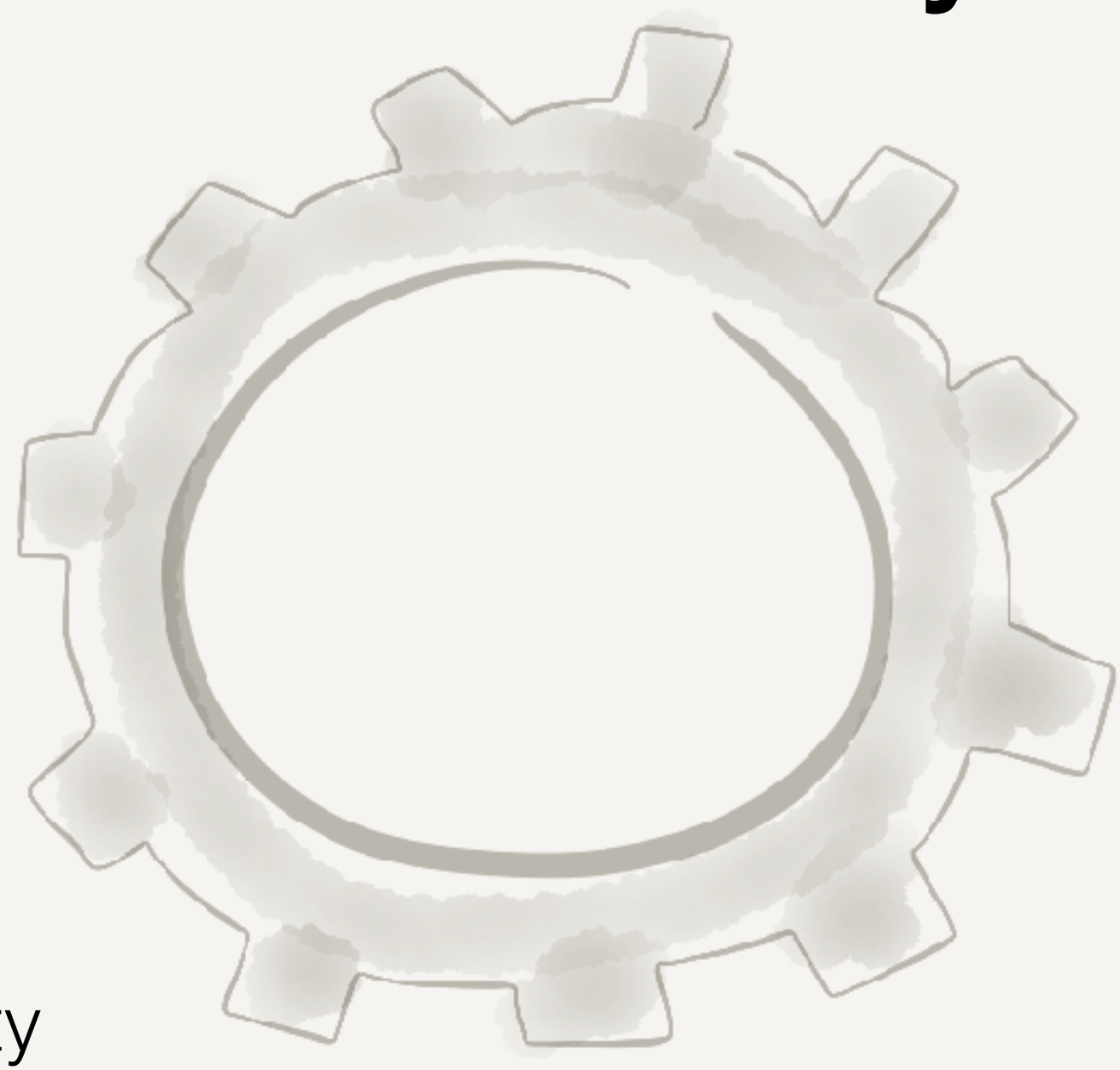
Code second.



Automate everything.

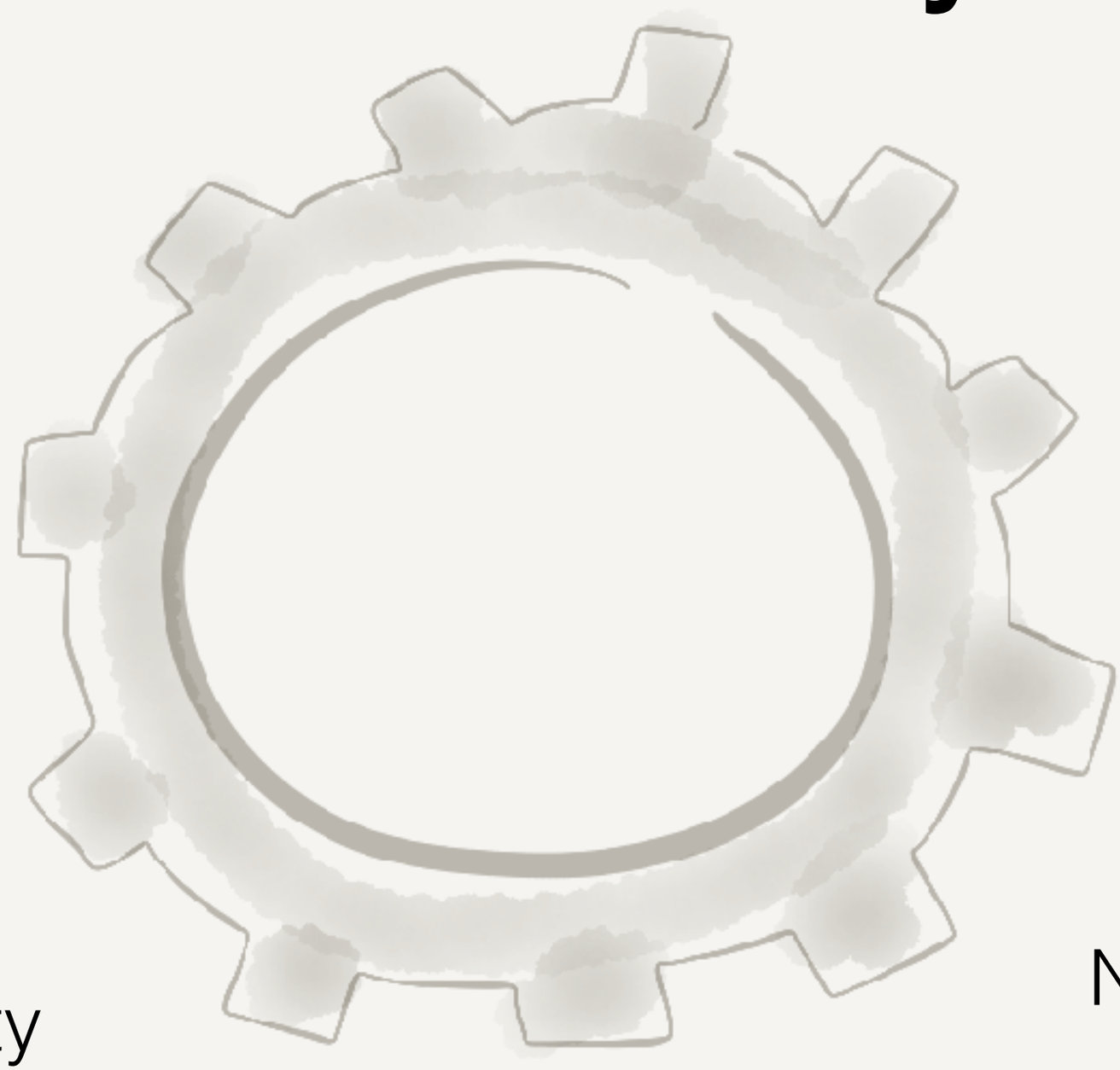


Automate everything.



Quality

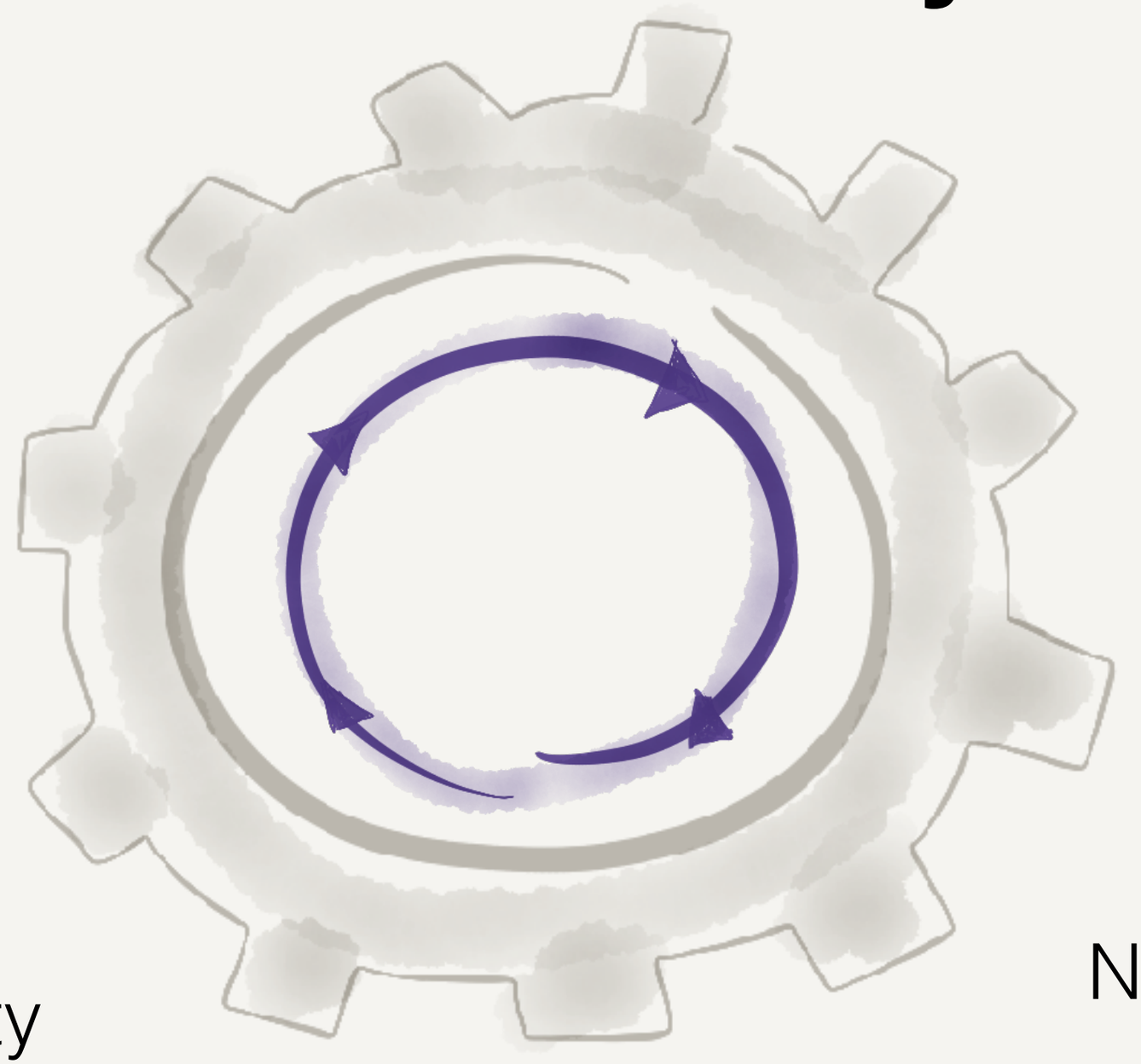
Automate everything.



Quality

Nimbleness.

Automate everything.



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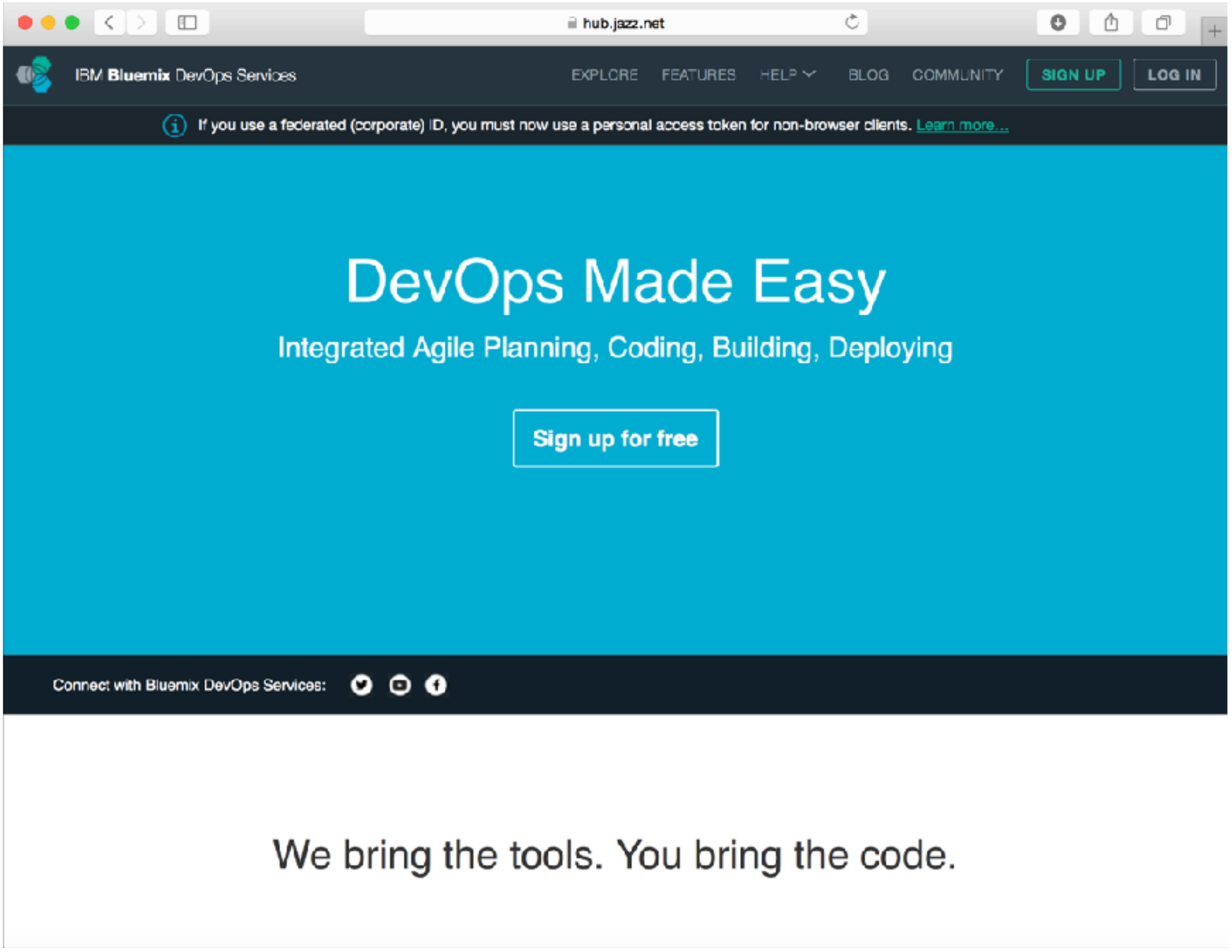
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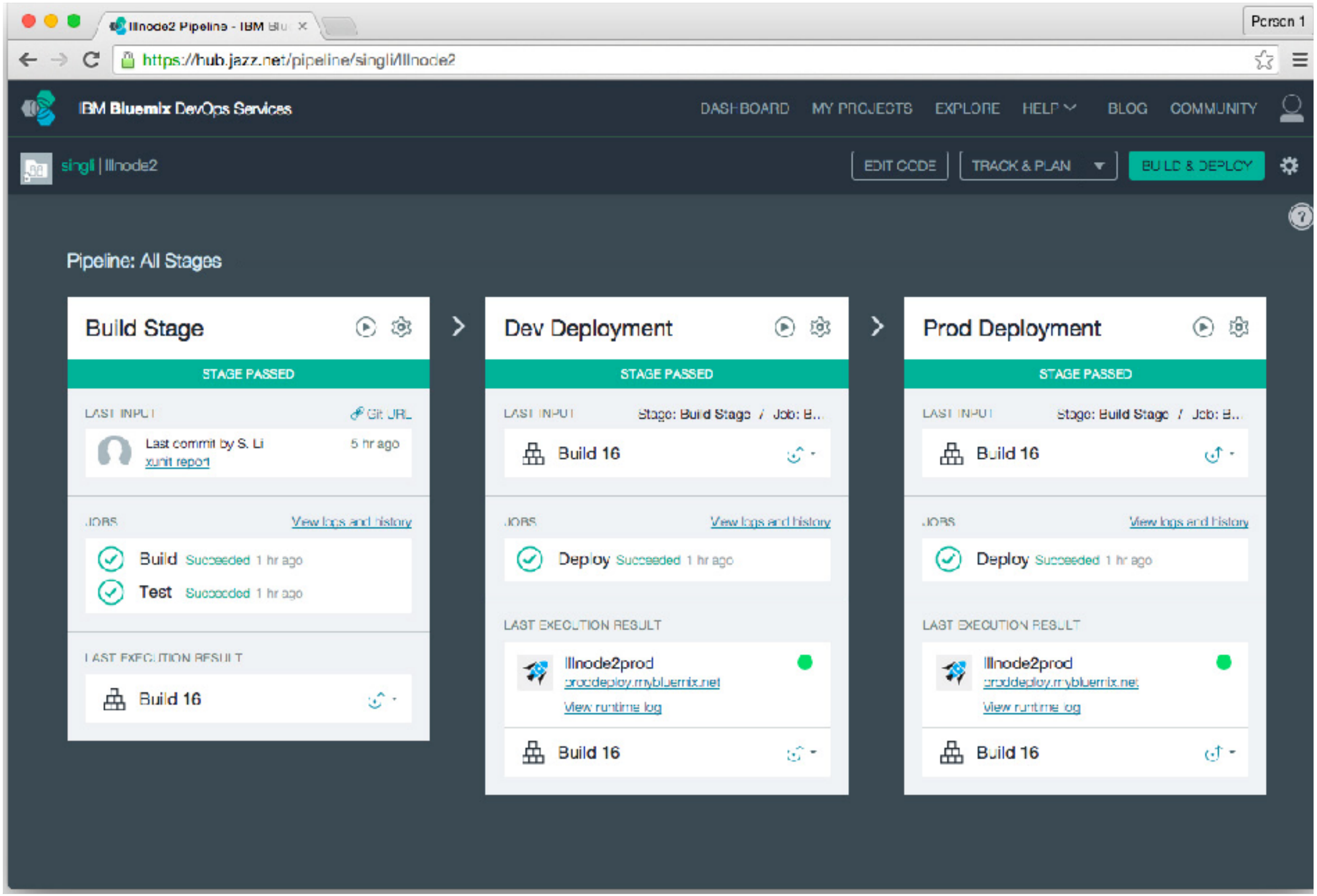
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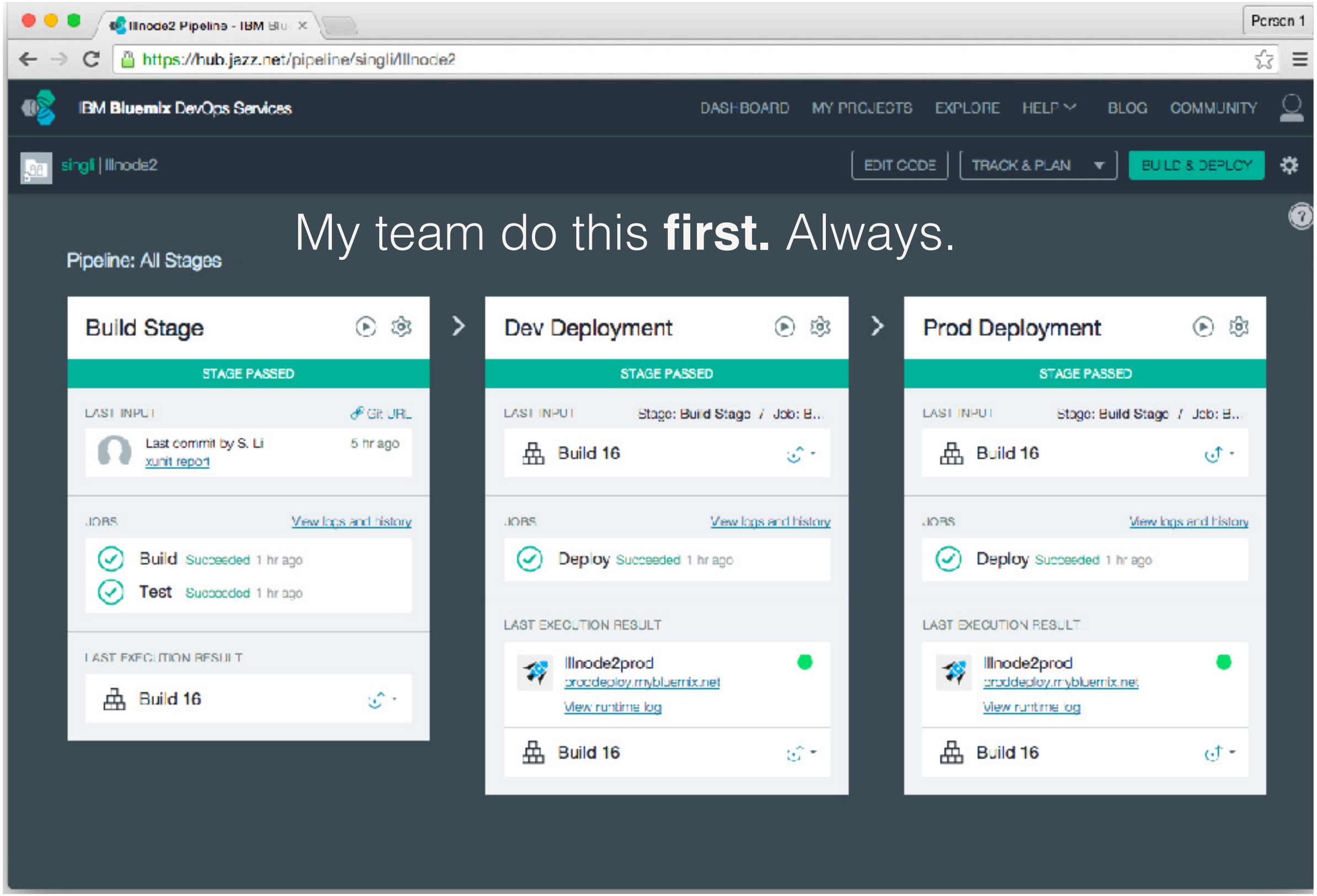
View runtime log
Build 16

My team do this **first.** Always.



IBM

@holly_cummins

holly's tips for building stuff

Continuously deliver.

What I’ve learned

What I should have learned

www.ibm.com/devops/method

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Learn about the IBM Bluemix Garage Method!

You can deliver innovative new applications faster and cheaper with just the right features. Learn about IBM's transformation journey as it adopted DevOps practices and created a culture of innovation and agility to quickly iterate and pivot in response to the market.

Learn

Continuously experiment to deliver the right solution

- Formulate hypotheses and design experiments to drive development
- Establish clear metrics for decision making
- Drive findings to the backlog and pivot

Want to learn more about the DevOps transformation journey? See the white paper, Innovate like a start-up, scale like an enterprise.

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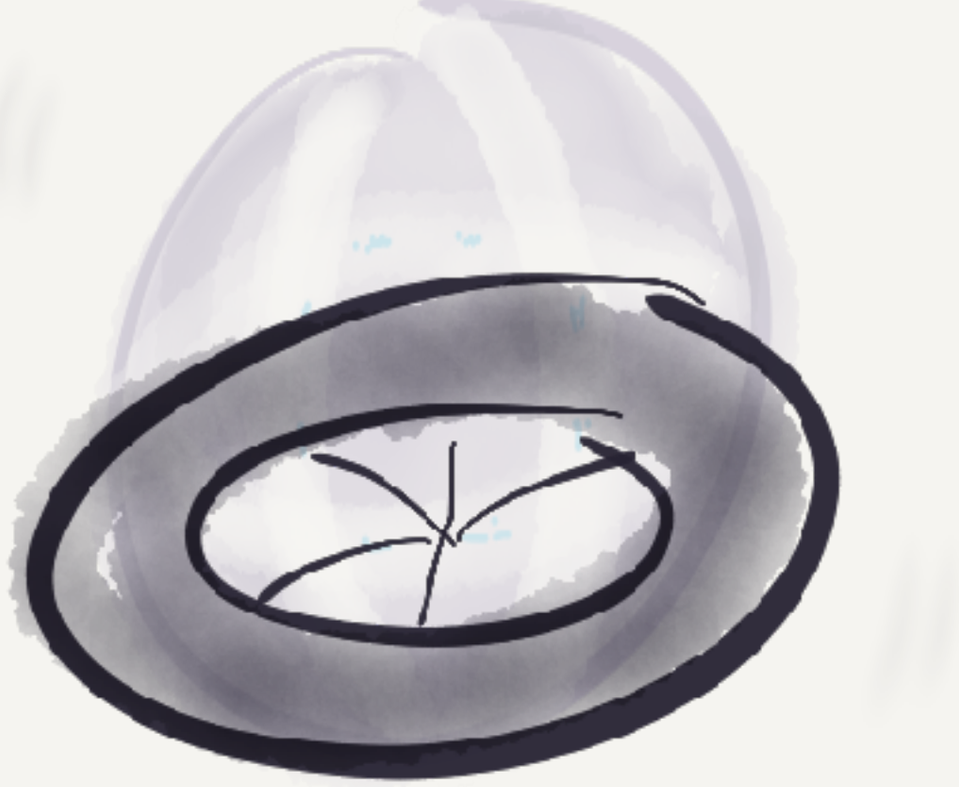

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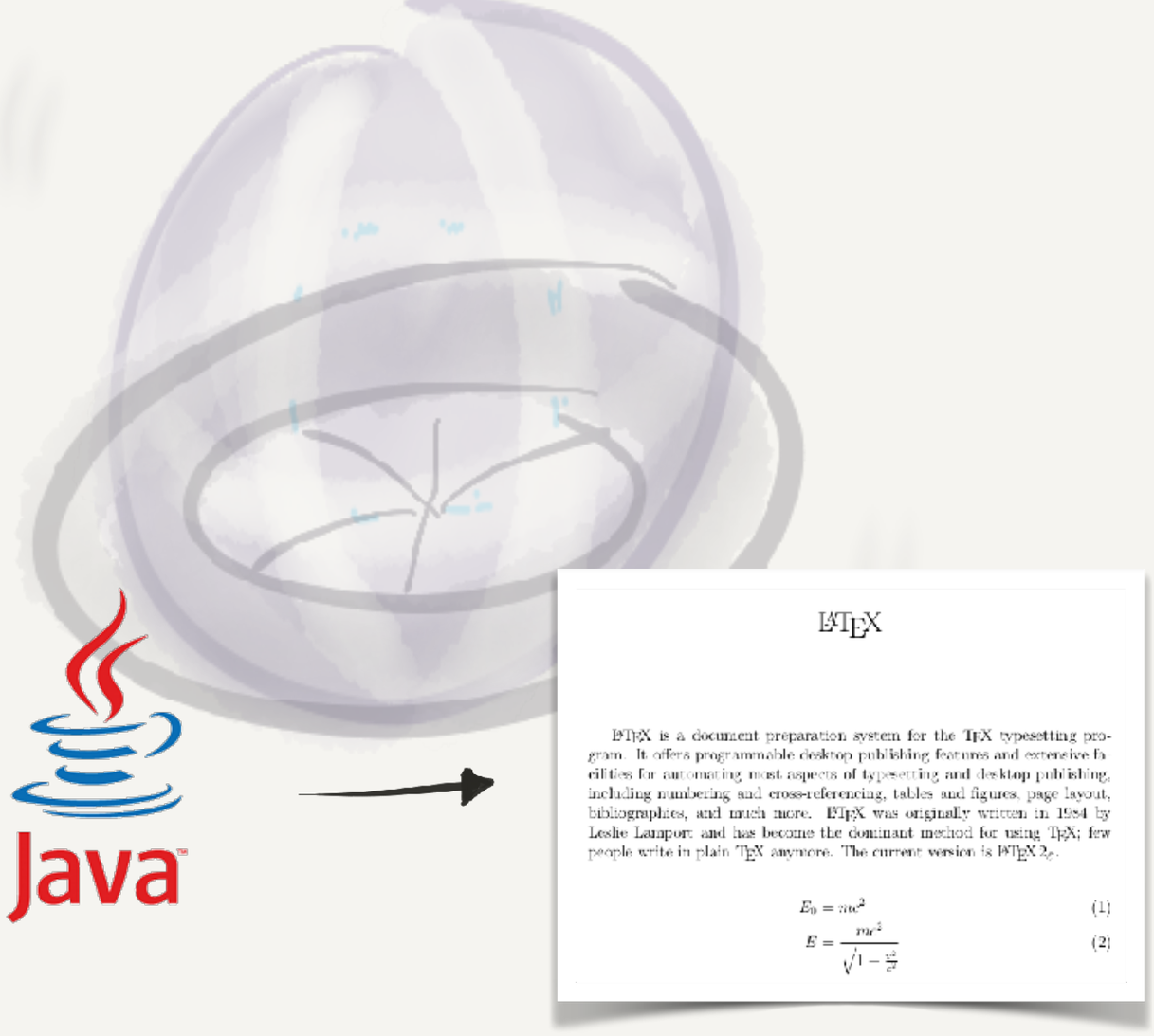

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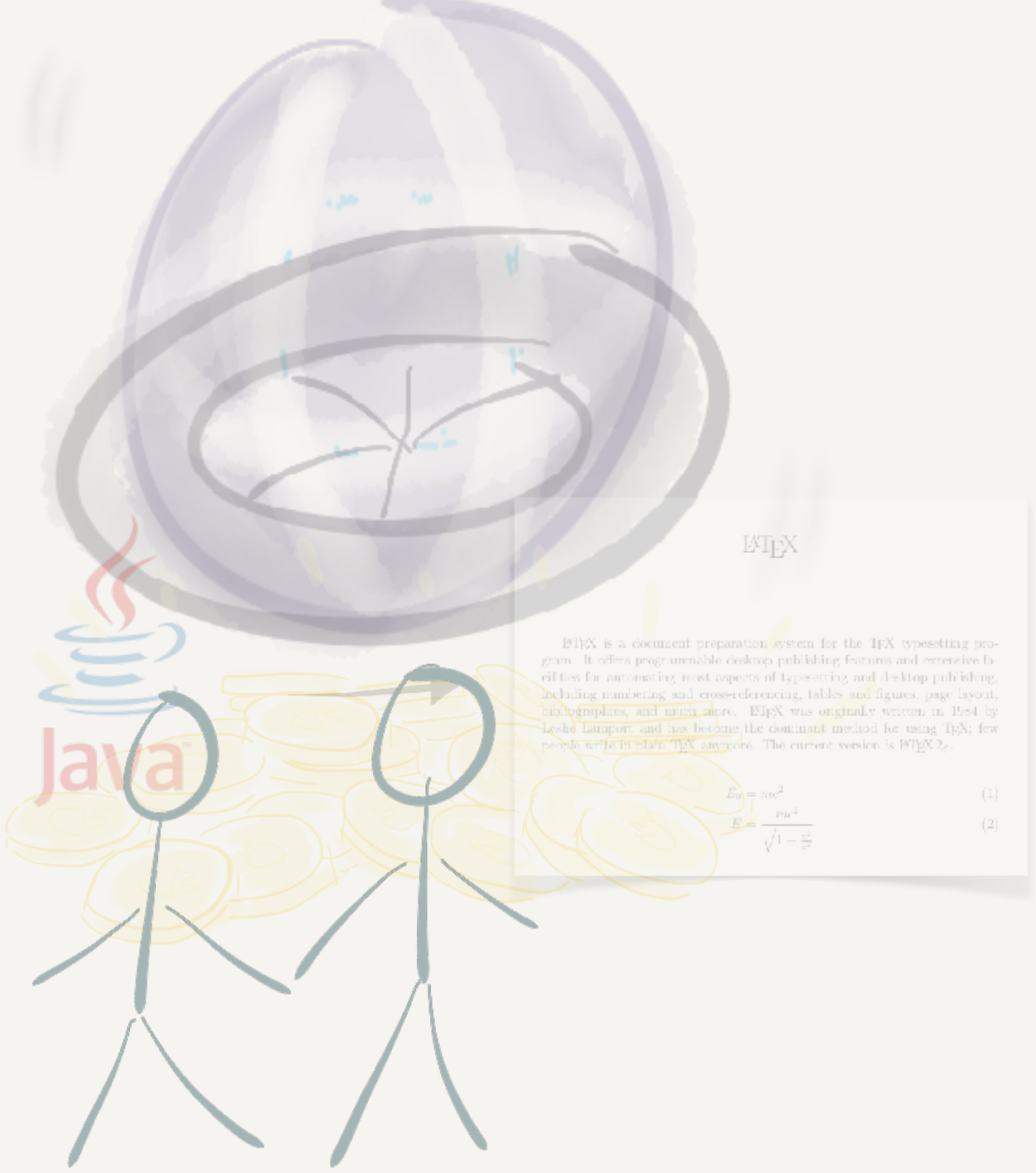

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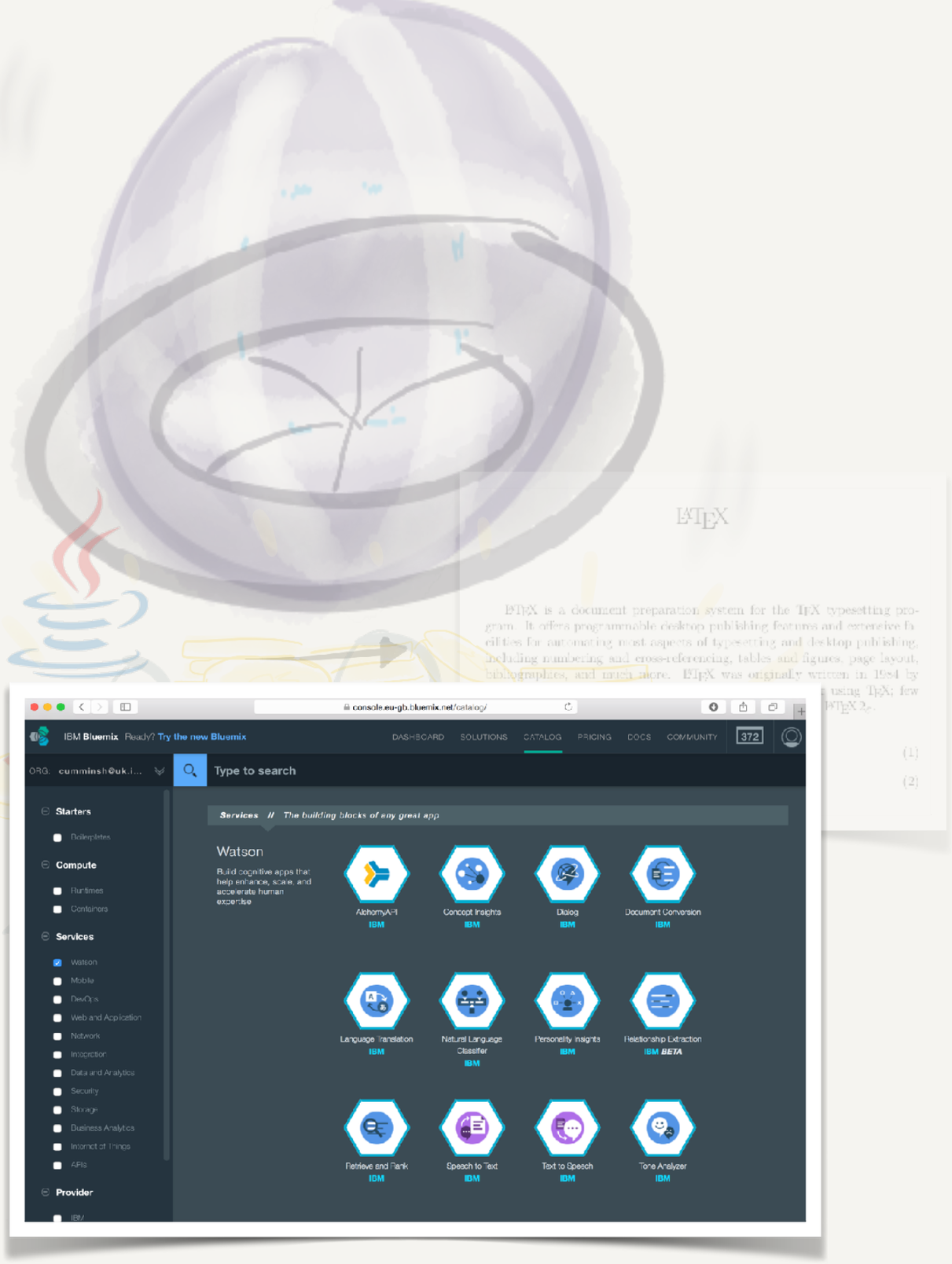

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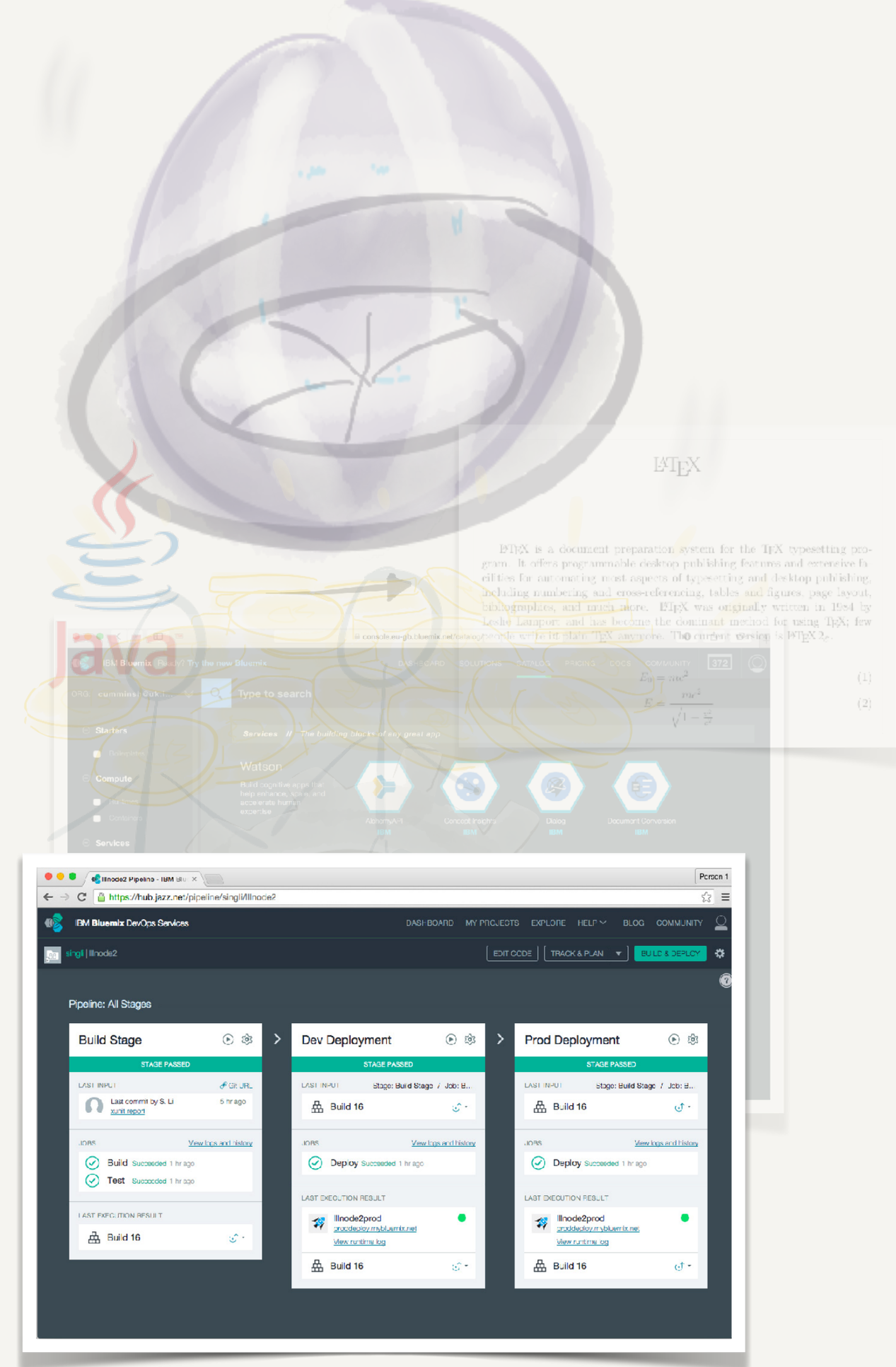

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- CI/CD is really important.

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Feedback

Focus on user value

Tools

Feedback

And finally …

never stop making stuff

@holly_cummins

http://ibm.biz/bluemixgaragelondon