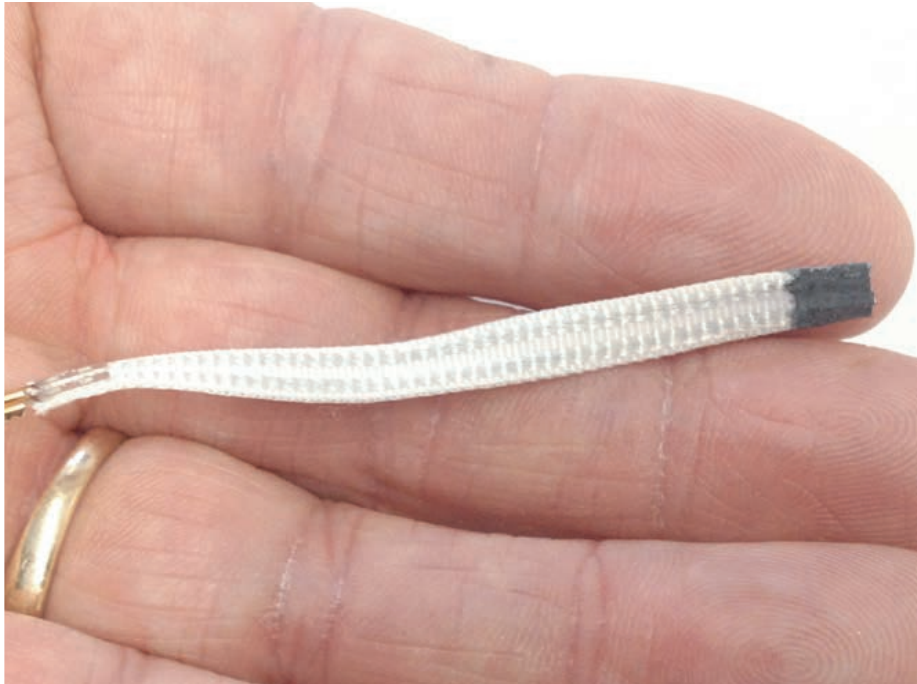


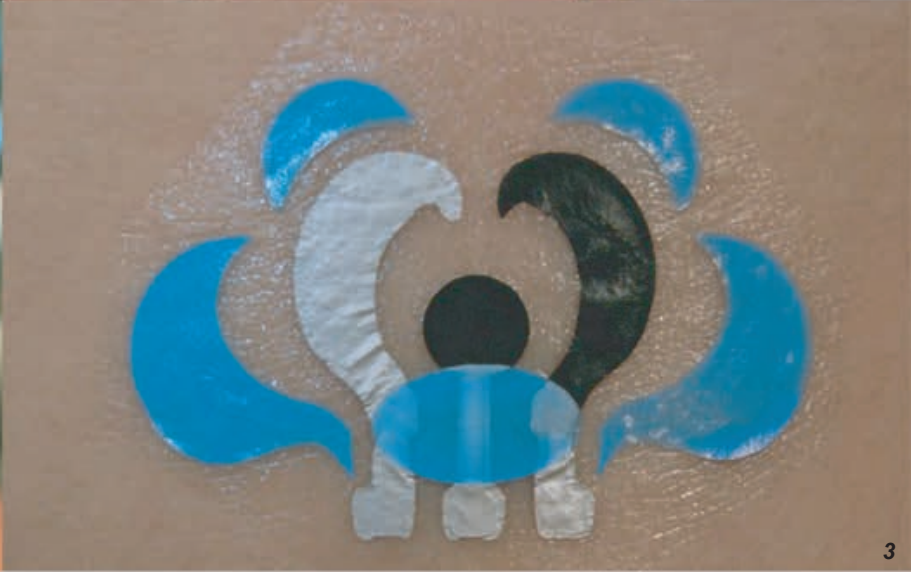
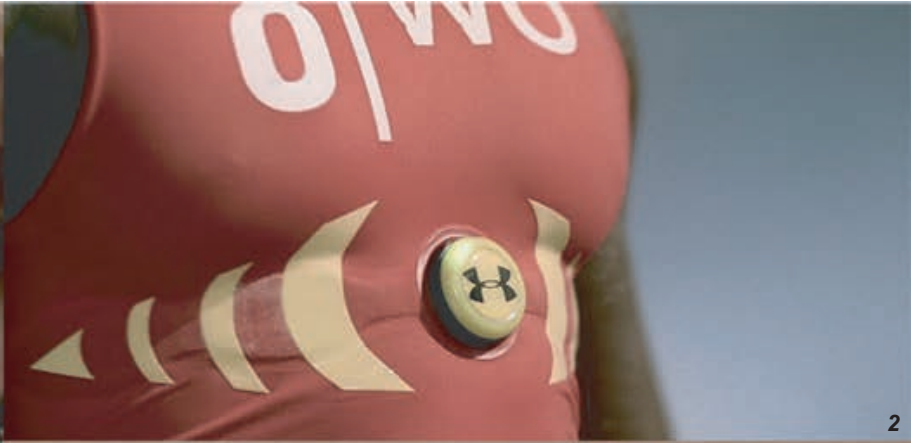
## ***Self-knowledge* through textile-based sensing?**



**Quantified Self London Show & Tell #17**  
18th June 2013

Anne Prah

*Sensor-enabled textiles*



- 
- 1 *Diffus* CO2 pollution monitoring textile
  - 2 *Under Armour* E39 electronic sensor shirt
  - 3 *Joseph Wang* Electrochemical transfer tattoo
  - 4 *UC San Diego* Printed biomarker sensing

***Sense what?***



- 
- 1 **Sabretooth** (Marvel) possesses a highly sensitive sense of smell to recognise and track targets by scent
  - 2 **Peter de Cupere** Olfactory Art

# Sense why?



pol-lu-tion

*/pə'li:ʊʃən/* (Noun)

Noun

The presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects.

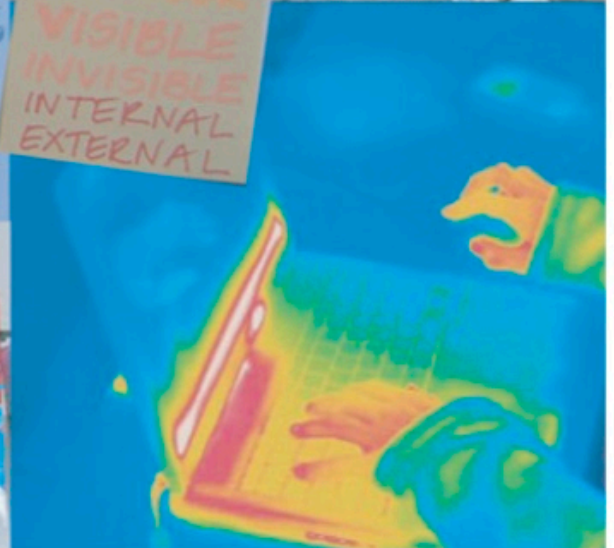
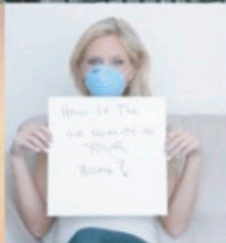
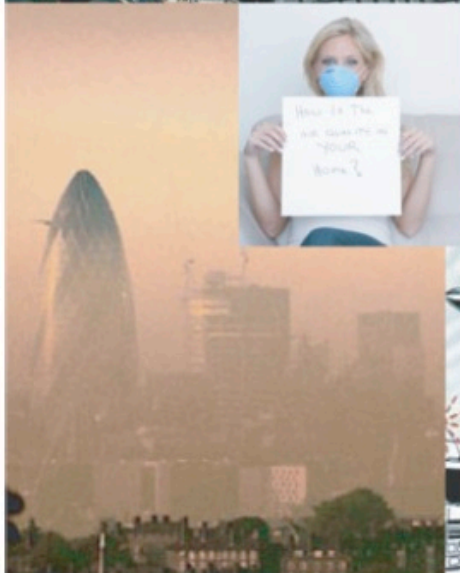
Synonyms

contamination - defilement

More info: Wikipedia - Dictionary.com - Answers.com - Merriam-Webster

personal pollution what is pollution to me?  
> smell/taste, noise, waste/litter  
> A smell, taste, sound, substance, object that has a negative impact on my wellbeing  
harmful ←  
poisonous ←  
self-inflicted or caused by oneself  
perceived  
invisible

INDOOR  
OUTDOOR  
VISIBLE  
INVISIBLE  
INTERNAL  
EXTERNAL



Urban pollution

Electromagnetic radiation

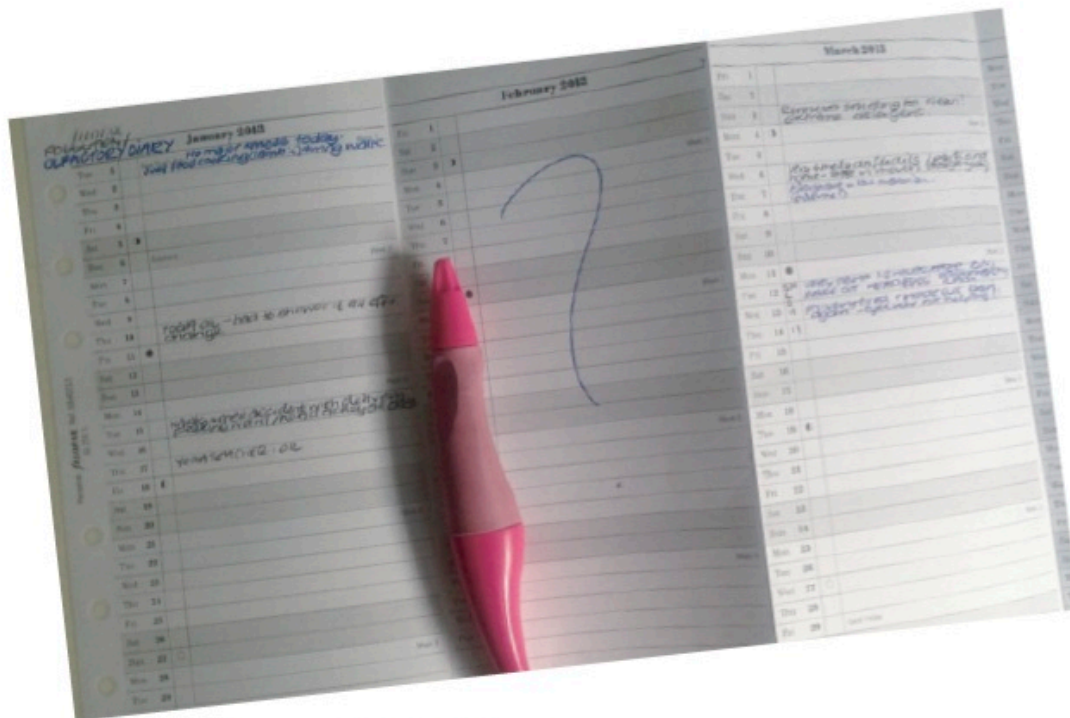
Indoor pollution

Toxic clothing

e-smog

Toxic technology

Toxic chemicals



analogue: 1/1/13-24/2/13

analogue: 1/1/13-24/2/13



analogue: 1/1/13-24/2/13

• Personal care/ hygiene products

• Mobile phone & laptop use

12/1/13 mobile phone - fried head?  
I stupidly spent 2 hours on the mobile for a conference call. And only last week looked at figures of how mobile phone radiation affects the brain, looking at scary images of the effect.  
Would there be a way to ~~shield~~ measure it, to send idigray on alert when you should come off the phone?  
This could be a patch or cap you put on to check the impacts and start changing behaviour?  
In addition, could there be a device to protect you? / shield you?  
They already exist I think but could they also warn you?

Perfume/hairspray/deodorant/ personal beauty products pollution

I only have control over what I use or don't!  
My friends are already scared of wearing perfume in my presence.  
Bath oil - Yuck!!  
Am I feeling sick because my husband has run a bath?  
I wasn't feeling sick before the smelly... was poured in the water!!

== SENSING 4  
reaction to products, to combine  
analyse  
ie write down products/ ingredients - then measure + monitor reactions?

NASTY STUFF'S SURPRISE

As the postman delivered my contact lenses today, I got a nasty surprise as soon as I held the contact box in my hand, I noticed a very strong and horrible smell of disinfectant (or similar) that I had to get the package open, looking at individual packages as they got stuck in the strips of lenses. I could quickly tell that packing was not good. I felt uncomfortable. I started trying to get the box open and on the way long after the going had gone into a terrible air stream after I noticed my strange headache, which makes me feel disoriented and like my brain is turned inside out and/or back to front. The whole afternoon my work and well-being seemed to be affected. I coughed into



Monday morning pollution?

Indoor

Could I be allergic to mornings or more precisely 'Monday mornings'? (This was in my childhood with a snappy 'weekend to match')  
Upon closer inspection, ie some self-quantifications, it turns out it is always a Monday morning and also affects my husband after 3 weeks of sunny Mondays I look at some factors that could be the cause. Drizzy afternoons are generally discounted to a r.n., which follows a power arc doing a load of laundry, which is hung up to dry in the bedroom. Following the

• Indoor air quality/ pollution

analogue: 1/1/13-24/2/13

- 'Dirty data'
- Invisible data?
- Subjectivity and perception
- Quantification of health effects

= frustrating,  
difficult to keep up  
& boring





SELECT A COLOR



## One™ Wireless Activity + Sleep Tracker

- Tracks steps, distance, calories burned, floors climbed and sleep cycle.
- Includes clip, USB dongle, charging cable and sleep band.

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COLOR: BURGUNDY

ADD TO CART

**digital:** 25/2/13-10/3/13

digital: 25/2/13-10/3/13

## Data generation



- Data *parameters*
- Data *sync*
- Data *management*
- Data *'burden'?*

*digital: 25/2/13-10/3/13*

## ***Wearability***



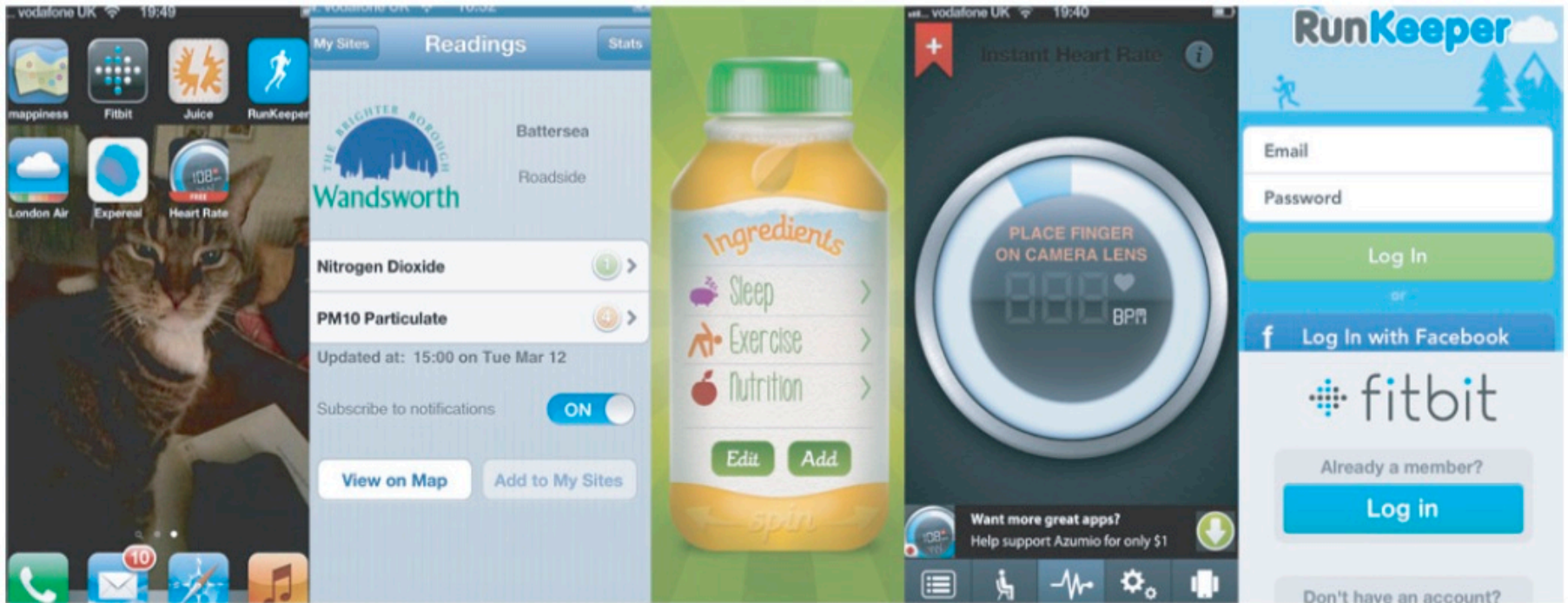
- Lack of choice/ *customisation* opportunities
- Device location *on body*
- *Device position* on garment/ accessory
- *Remembering* to wear device



***double digital***  
11/3/13-20/3/13

*double digital: 11/3/13-20/3/13*

## Data generation



- Surrounding *variables*
- Devices & *apps*

- 1 *My apps* self quantification
- 2 *London Air* pollution monitor app
- 3 *Juice* energy tracker app
- 4 *Azumio* heart rate app
- 5 *Runkeeper* app/ website
- 6 *fitbit* app/ website

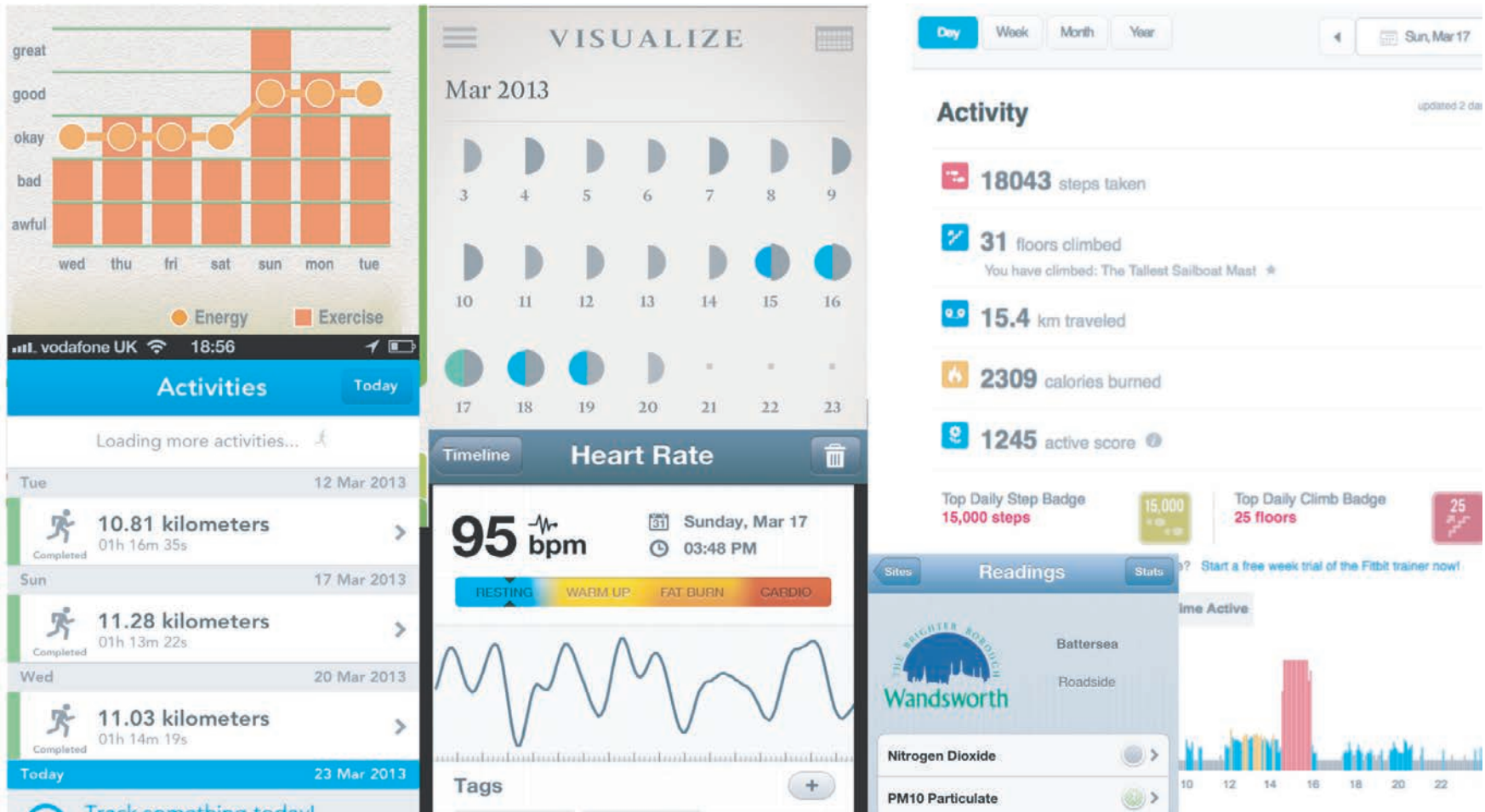
*double digital: 11/3/13-20/3/13*



- Device *juggling*
- 'Live' data *distraction*
- Data *slave*
- Data *relevance?*

*double digital: 11/3/13-20/3/13*

## Data interpretation



*All my apps agreed: Sunday the 17th of March was a pretty good day...*

- 1 **Juice** energy tracker app
- 2 **Expereal** mood tracker app
- 3 **Fitbit** my dashboard on fitbit.com
- 4 **London Air** pollution monitor app
- 5 **Azumio** heart teate app
- 6 **Runkeeper** fitness app

*double digital: 11/3/13-20/3/13*

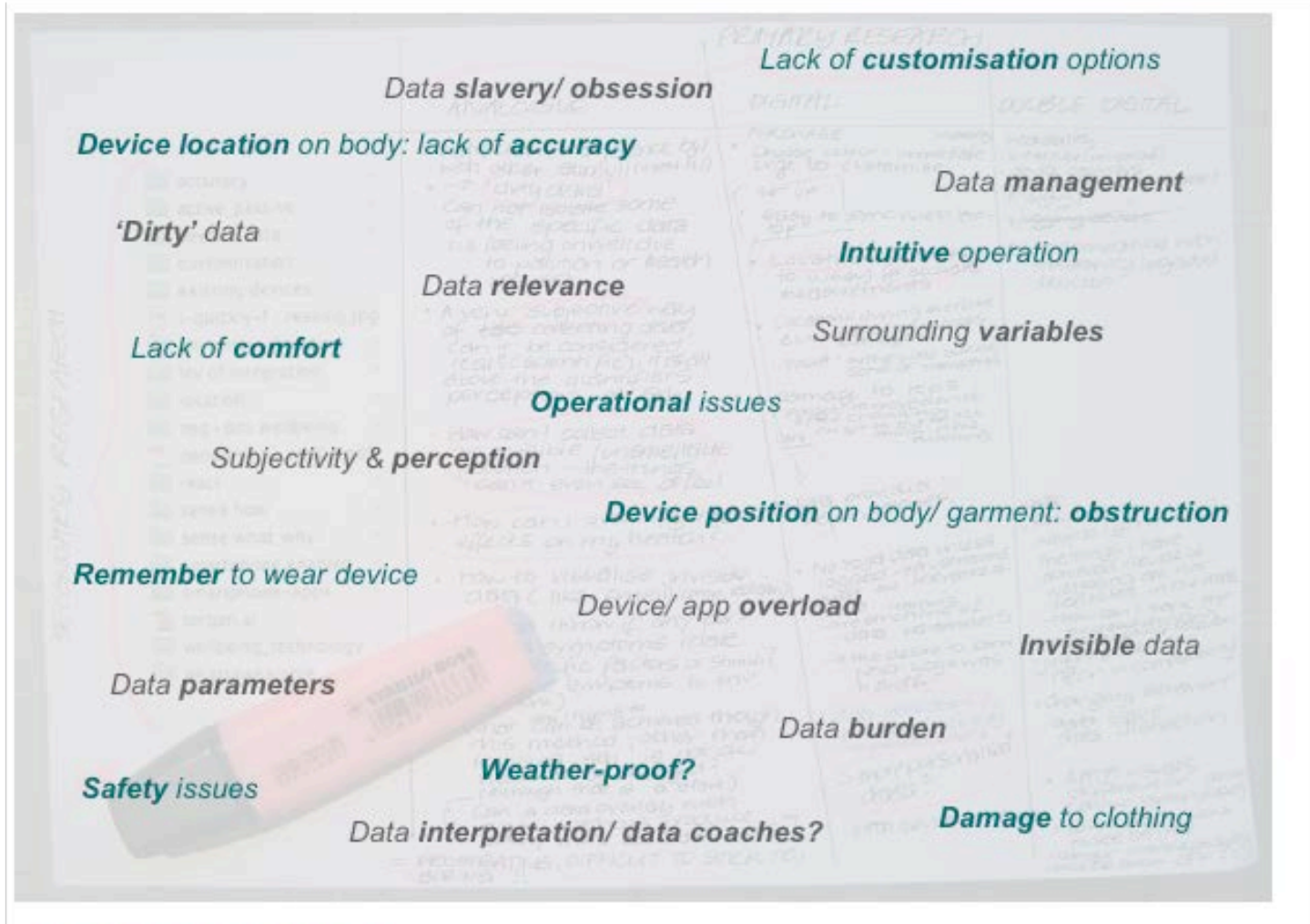
***Wearability***



- *Wearable device carriers*
- *Device visibility*
- *Weather conditions*



## What did I learn....and what does it mean for my research?



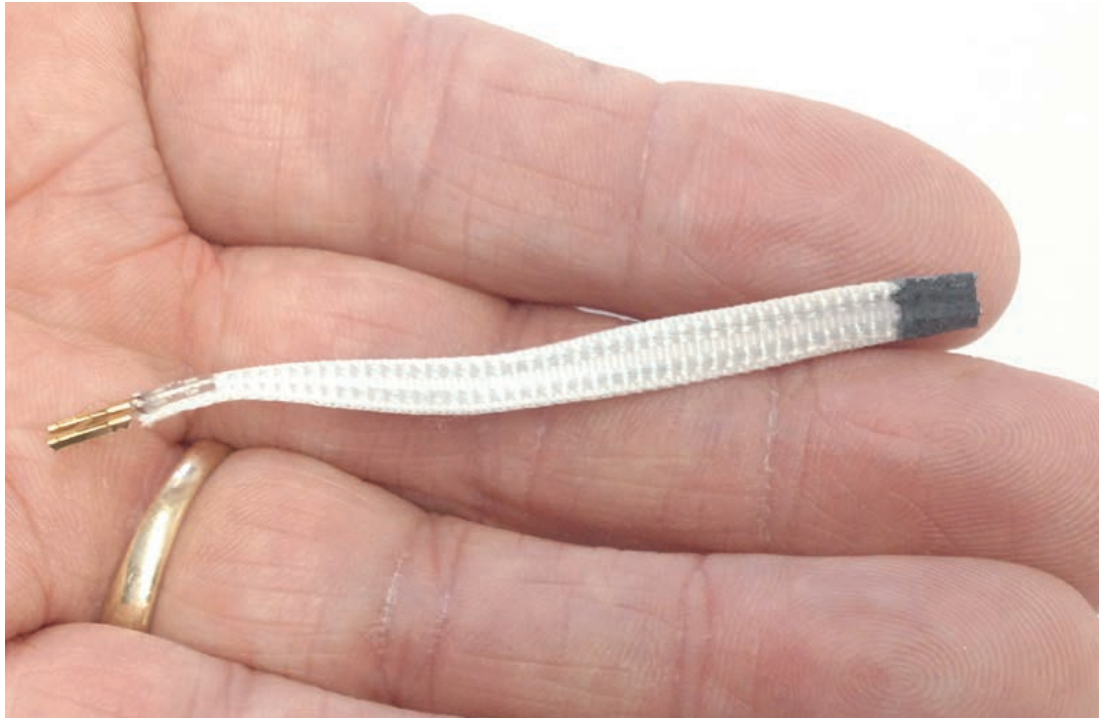
● Device wearability

● Data generation & management



## *Hack my fitbit?*

- 1 **Sniffing fitbit**
- 2 **Charalampos** Hacking the fitbit for extra motivation  
<http://blog.buildinginternetofthings.com>
- 3 **Josh Larios** Making he fitbit more wearable  
[www.flickr.com](http://www.flickr.com)



---

**1 Peratech** QTC enabled '*electronic nose*':  
detection and monitoring of volatile organic  
compounds (VOCs)

“

*Is self-quantification **all about the data** or could we explore **alternative opportunities** fo self-knowledge for **wellbeing** through utilising **textile-based sensing**?”*



- 
- 1 *Diffus* LED enabled alert pattern
  - 2 *Marjan Kooroshnia* pattern/ colour change alert
  - 3 *Rain Palette* colour change alert
  - 4 *Warning Signs* light/pattern pollution visualisation

## ***Self-knowledge*** through **textile-based sensing?**



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<http://www.meetup.com/LondonQS/members>