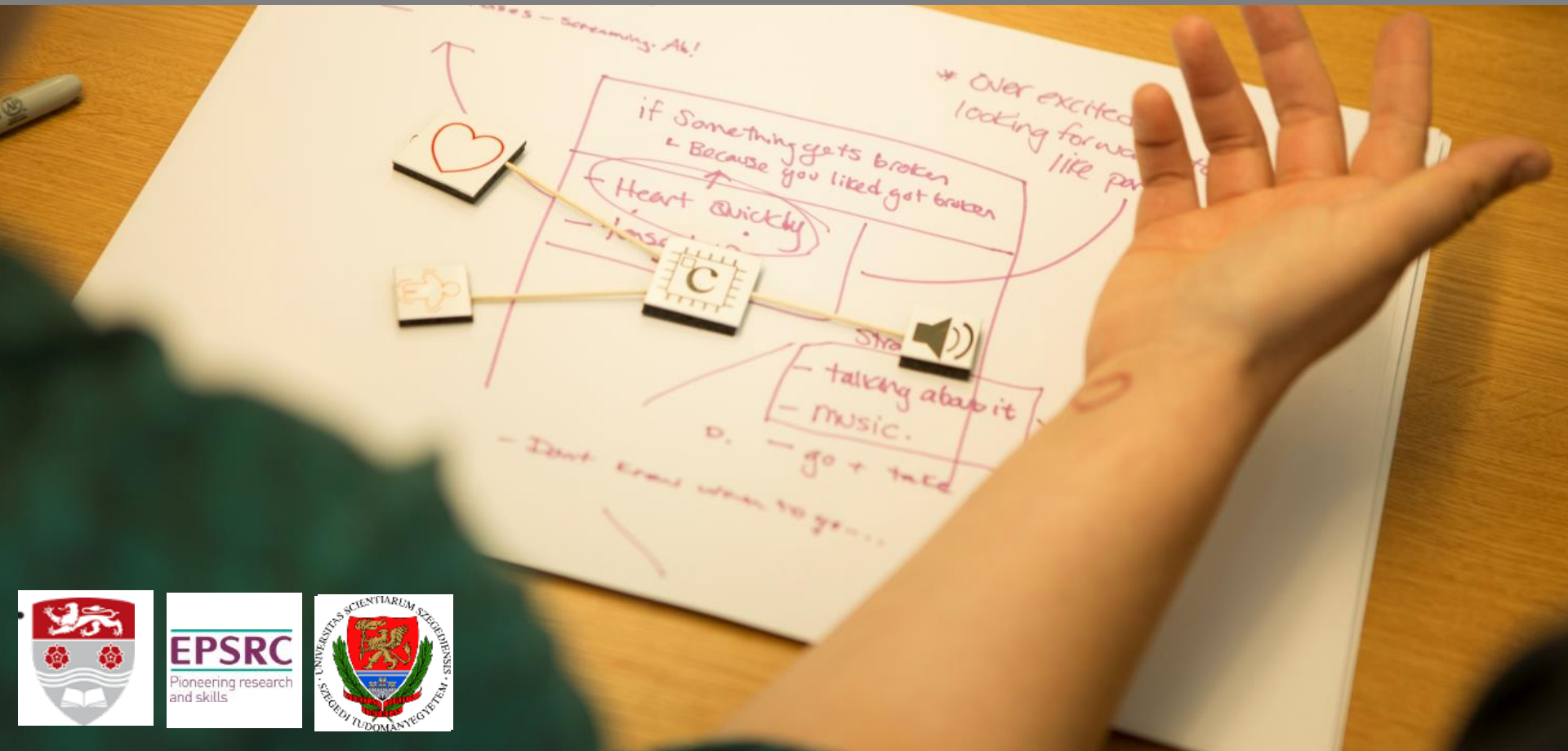


# Towards a Sustainable Framework in Digital-Social Innovation

*Integrating Circular Economy, Capability Approach & Action Research*

Maria Angela Ferrario, Zoltán Bajmócy, Will Simm, Stephen Forshaw

03 July 2015 – European Society of Ecological Economics ESEE2015





# Presentation Map

- Prelude {Health: Big Data & Small Sensors}
- One Key Question {Innovation & Society}
- Two Big Challenges {Complexity & Values}
- Our Approach {Participatory & Agile}
- Take Away Message {work with the 'edge'}



IEEE  
SPECTRUM

FOR THE TECHNOLOGY INSIDER | 06.15

A CODER'S GIFT  
TO HIS SON  
A brilliant hack by  
a diabetes dad  
P. 15

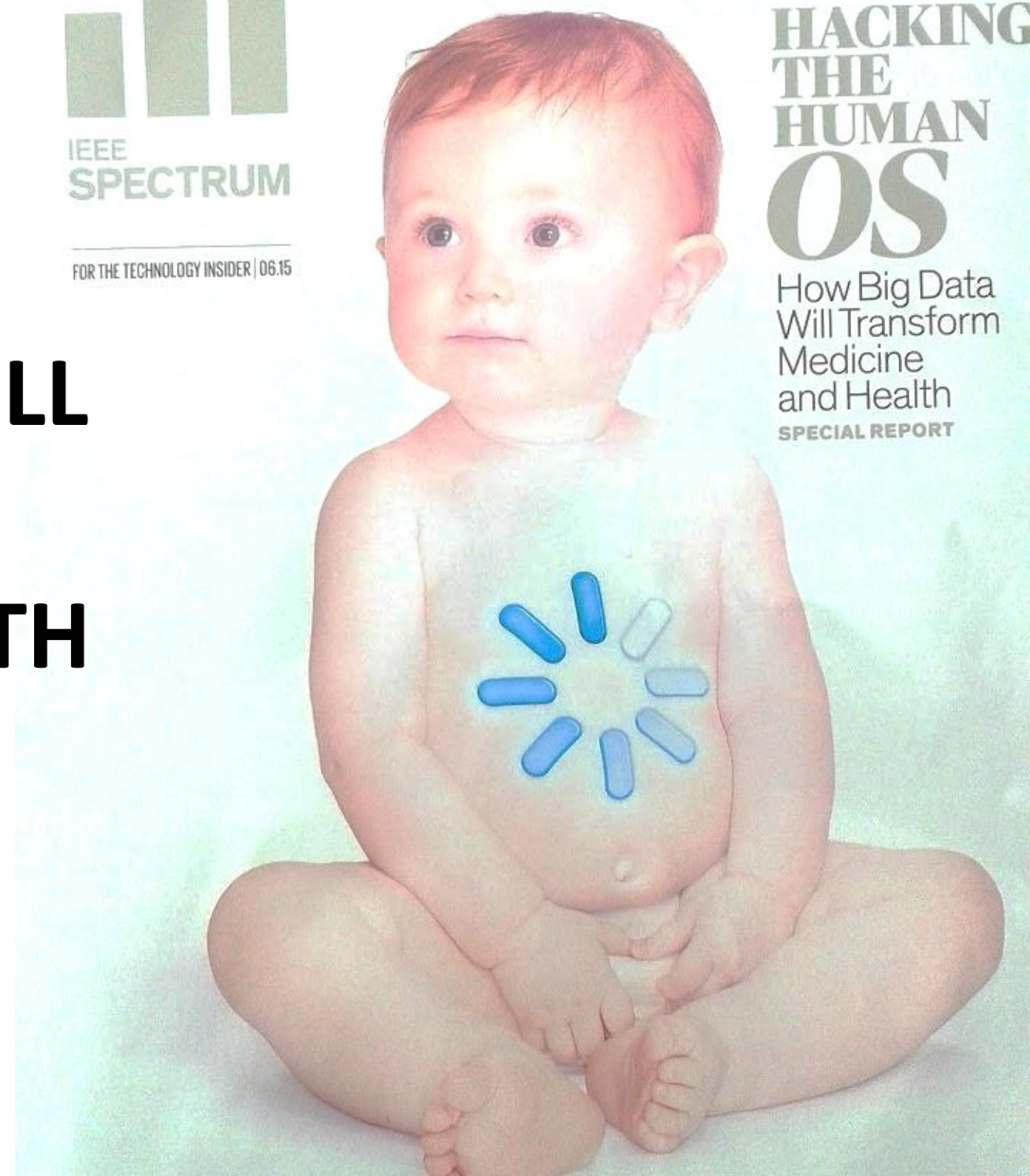
WEARABLES WORN  
BY PRO ATHLETES  
The tech that gives  
top stars an edge  
P. 36

THE DOC IN  
YOUR POCKET  
Inside the Tricorder  
XPrize competition  
P. 38

WHY THE EBOLA  
MODELS FAILED  
Big gaps in info  
couldn't be filled  
P. 54

# HACKING THE HUMAN OS

How Big Data  
Will Transform  
Medicine  
and Health  
SPECIAL REPORT

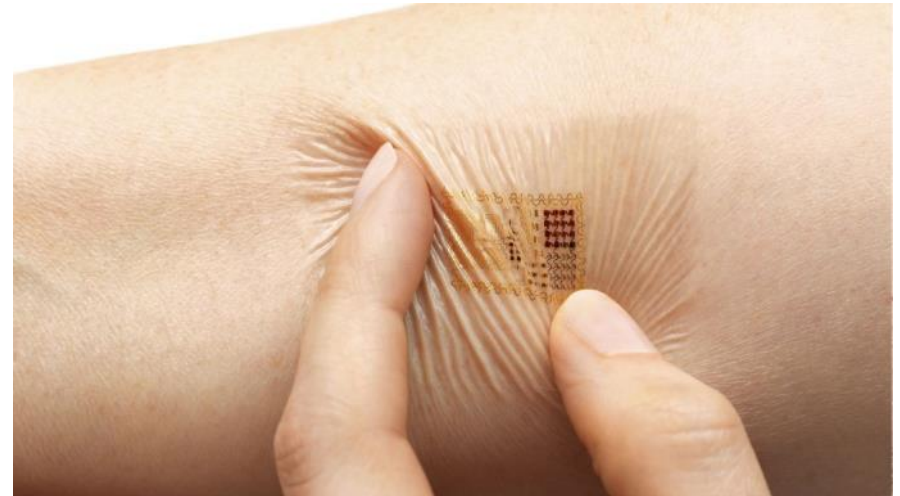


# HOW BIG DATA WILL *TRANSFORM* MEDICINE & HEALTH

source: IEEE Spectrum, June 2015



# ***HOW* BIG DATA WILL TRANSFORM MEDICINE & HEALTH**



“In ten years, **you won't even know** you're wearing them”



# HOW **BIG DATA** WILL TRANSFORM MEDICINE & HEALTH



“For a user, the network elements are **invisible**, as if **obscured** by a cloud”

# HOW BIG DATA *WILL* TRANSFORM MEDICINE & HEALTH



“Fitbit for babies: watch Sproutling unveil its new wearable baby monitor”

source: [www.ibtimes.com/fitbit-babies-watch-sproutling-unveil-its-new-wearable-baby-monitor-video-1695139](http://www.ibtimes.com/fitbit-babies-watch-sproutling-unveil-its-new-wearable-baby-monitor-video-1695139)



# clasp. (H-IoT)





# *Why* we avoided this



Tech as Prosthetic  
Tech Solutionism  
“One fits all”





# & went from *this...*



***‘CLASP’***

Tactile Anxiety Management  
and Peer Support Network System

...to *this*




**'SNAP'**

Wearable personal sensing device  
Modular, Reflective, Intentional



# *How?* In the box





# Key Question

(How) Can  
Digital Innovation  
help with Complex  
Societal Issues?



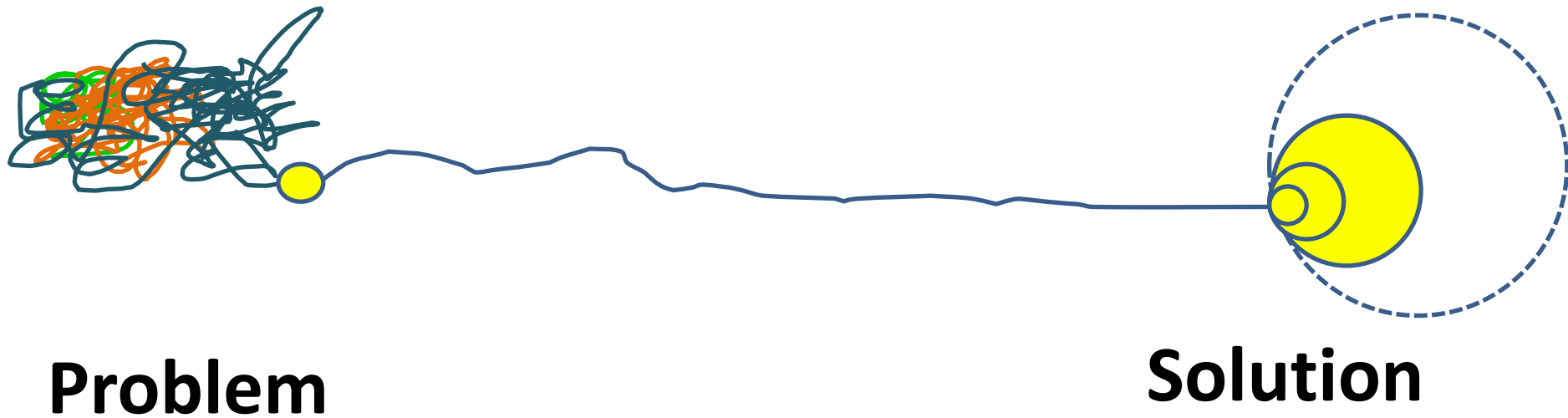
# Big Challenge 1





# Big Challenge 1

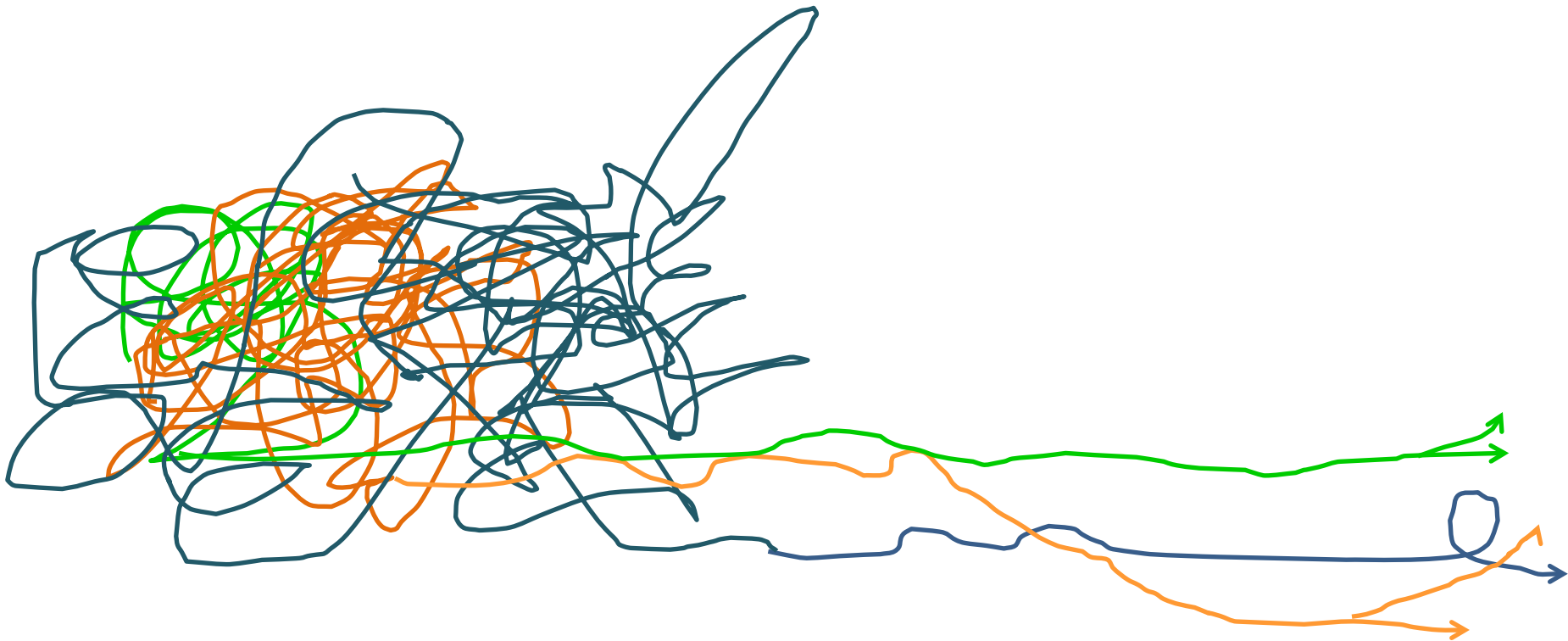
Computational thinking  $\Leftrightarrow$  technology solutionism





# Our Approach...

Systems thinking / Design Thinking

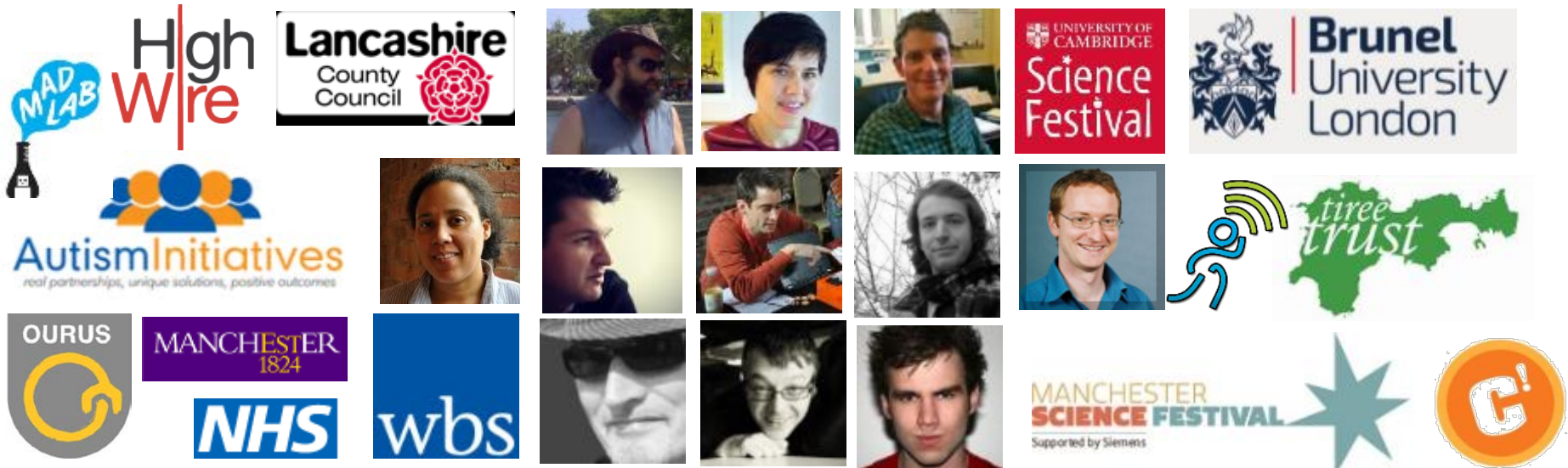


# ...Deconstruct, Co-develop, Open up





# People, Projects, Partners





# Big Challenge 2

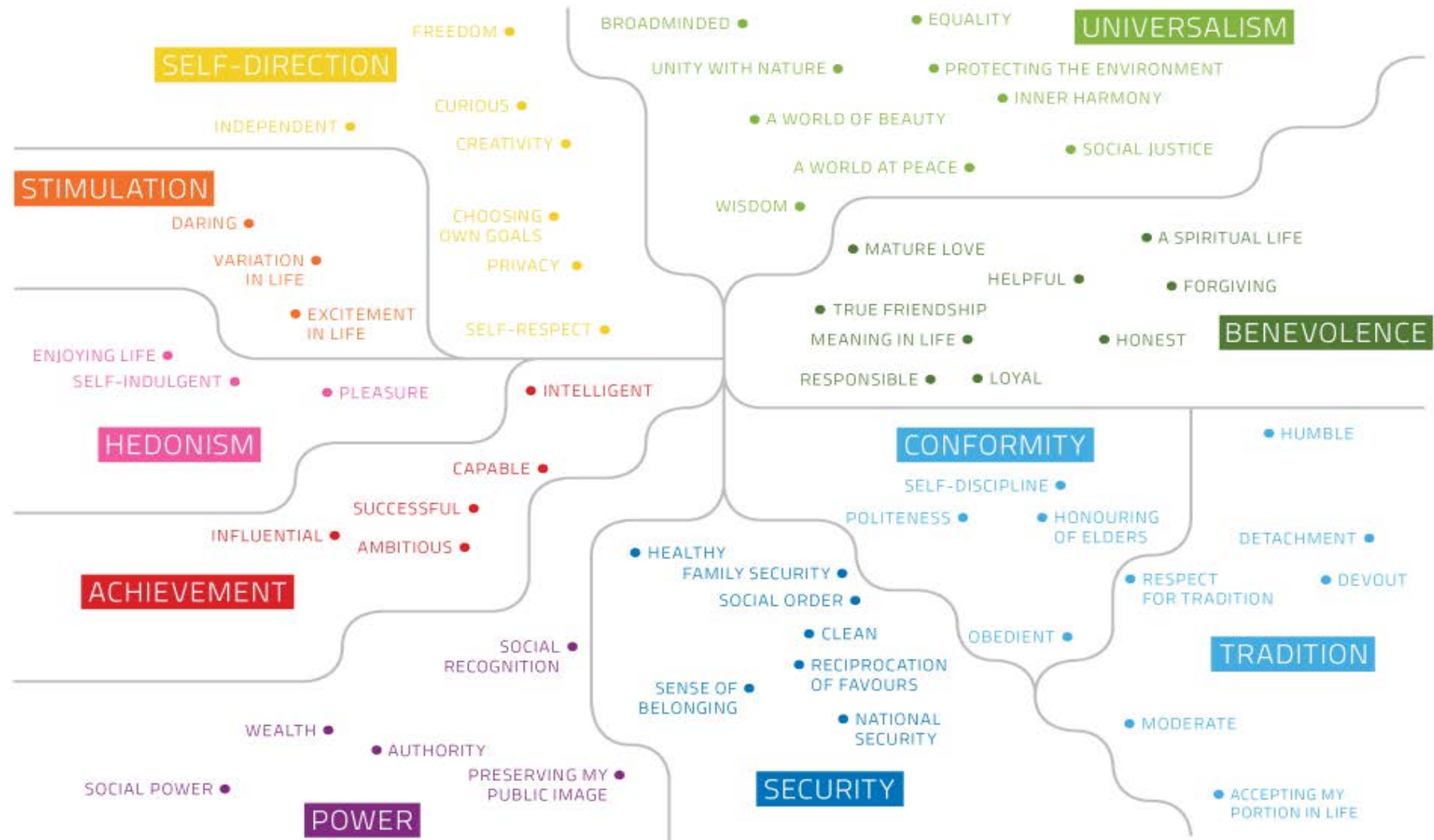
## Value vs Values:

**Value:** (£) quantifiable

**Values:** less so, still are the main drivers of our actions

# Our Approach

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in experimental social psychology*, 25(1), 1-65.



# ACTION!



Ferrario, MA et *al.* Software engineering for 'social good': integrating action research, participatory design, and agile development. *NIER/ICSE2014.*

# Speedplay:

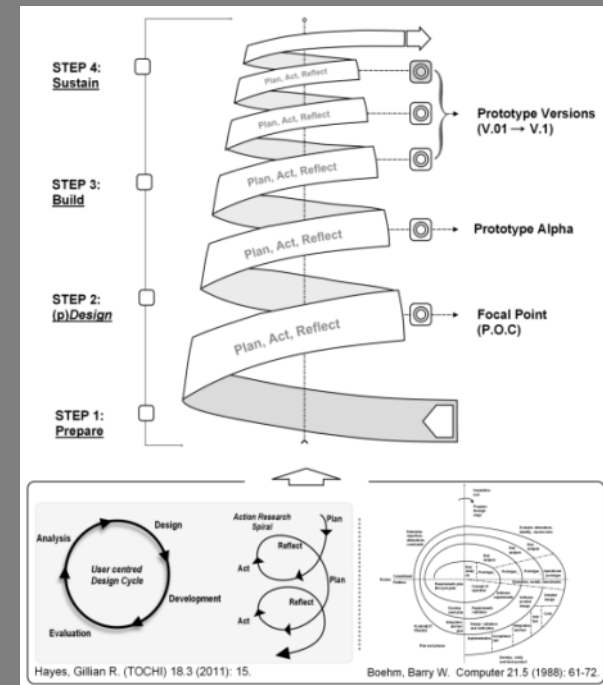
AGILE

PARTICIPATORY

VALUES-SENSITIVE

OPPORTUNISTIC

UNDISCIPLINED





# 'Snap, Sustainability

CE

Material / Production Processes {Modularity}

PD/AR

Accessibility / Maintenance {Openness}

CA

Agency / Freedom {Transparency}





# Take Away Msg

Co-develop values-led technology, in partnership with the **most vulnerable**

Make it functionally & aesthetically **desirable**, operationally **sustainable** and **resource-aware**. Accept that it may not fully resolved: prepare to **hand it over**



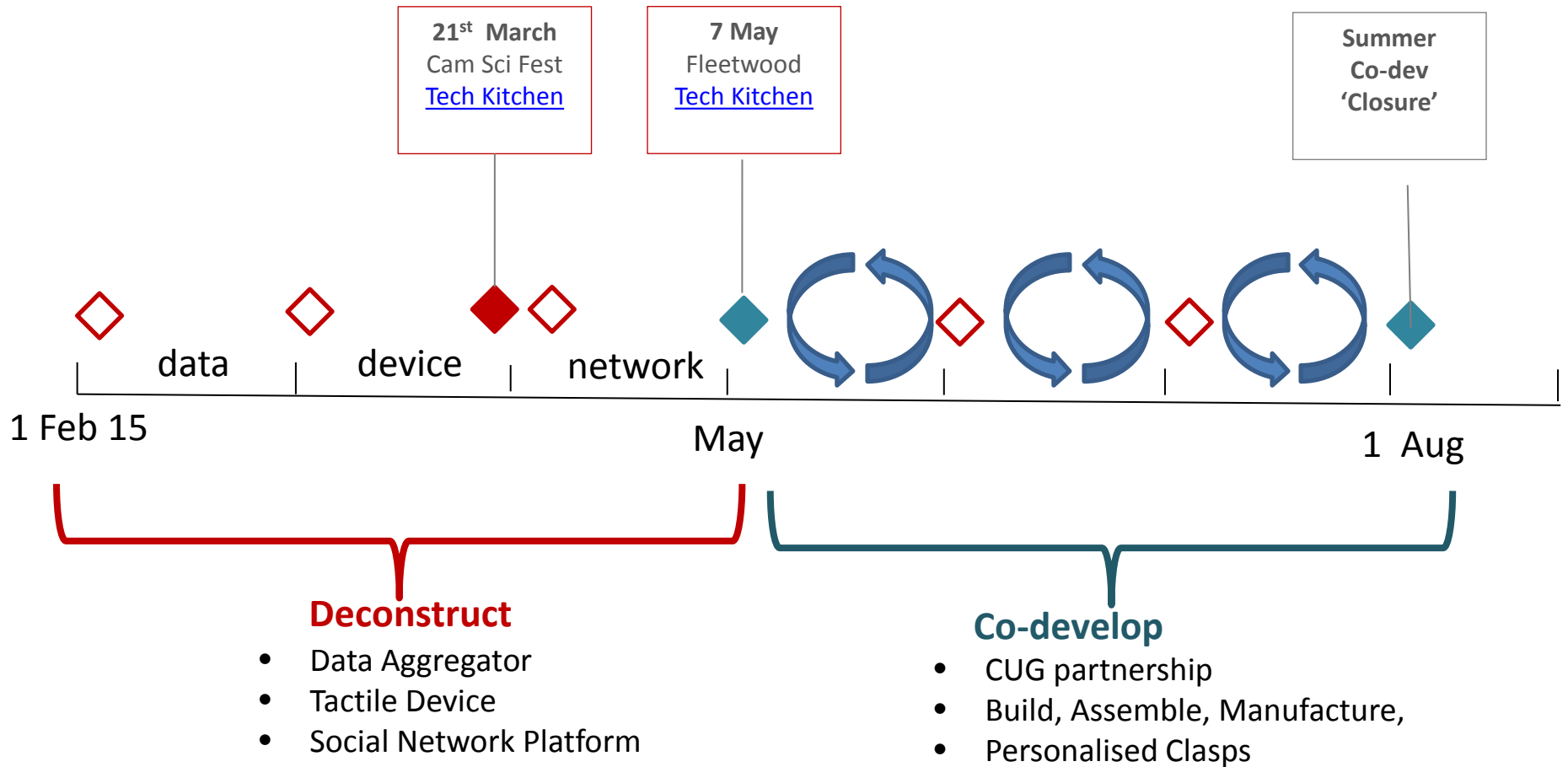
[www.myclasp.org](http://www.myclasp.org)

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m.ferrario@lancaster.ac.uk  
@malangela

Additional



# 6-month Roadmap (1 Feb- 1 Aug)





# Big Question...

Is 'this'  
Generalisable?  
{Impact,  
Approach  
Technology}

# Some Answers

## **IMPACT: Sustainable vs Generalisable**

- ‘Long’ and ‘wide’ effects of the intervention

## **APPROACH: the Proof is in the Practice**

- Speedplay used in several DSI domains {short / complex / volatile / exploratory/ ‘risky’ projects}

## **TECHNOLOGY: Scaling up**

- Beyond Autism Potentials