



2018

## Holistic outcome-based approach towards sustainable design healthcare: aligning the system purpose through system visualisation

Landa-Avila, Cecilia, I., Jun Gyuchan, Thomas, Cain, Rebecca and Escobar-Tello, Carolina

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# Holistic outcome-based approach towards sustainable healthcare: aligning the system purpose through system visualisation

I. Cecilia Landa-Avila, Gyuchan Thomas Jun,  
Rebecca Cain and Carolina Escobar-Tello.

LOUGHBOROUGH  
DESIGN SCHOOL



# AGENDA

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## INTRODUCTION:

The challenge to make sense healthcare systems

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## METHODOLOGY:

Workshop

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## RESULTS:

Individual and team visualisations

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## IMPLICATIONS:

Outcomes as shared language / Visual technique

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## CONCLUSIONS:

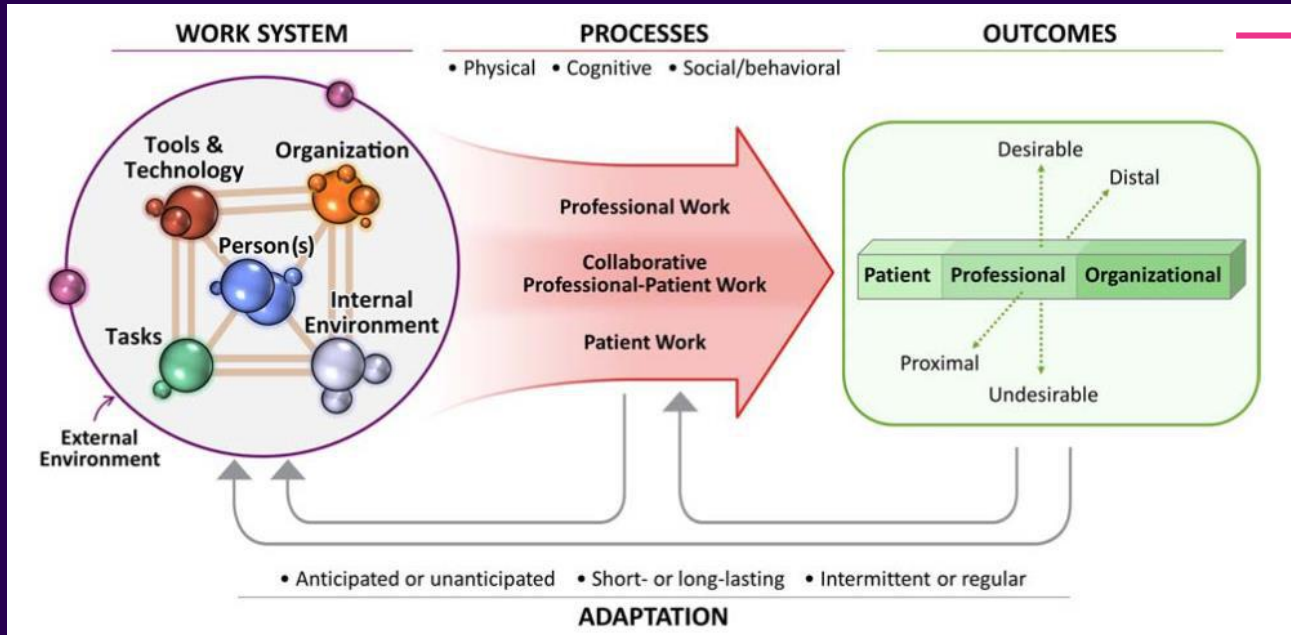
Trigger meaningful discussion / Enable holistic perspective

# INTRODUCTION

Holistic outcome-based approach towards sustainable healthcare: aligning the system purpose through system visualisation  
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# The challenge to *visualise* healthcare systems

To visualise as enabler to communicate complex problems and to build shared solutions.



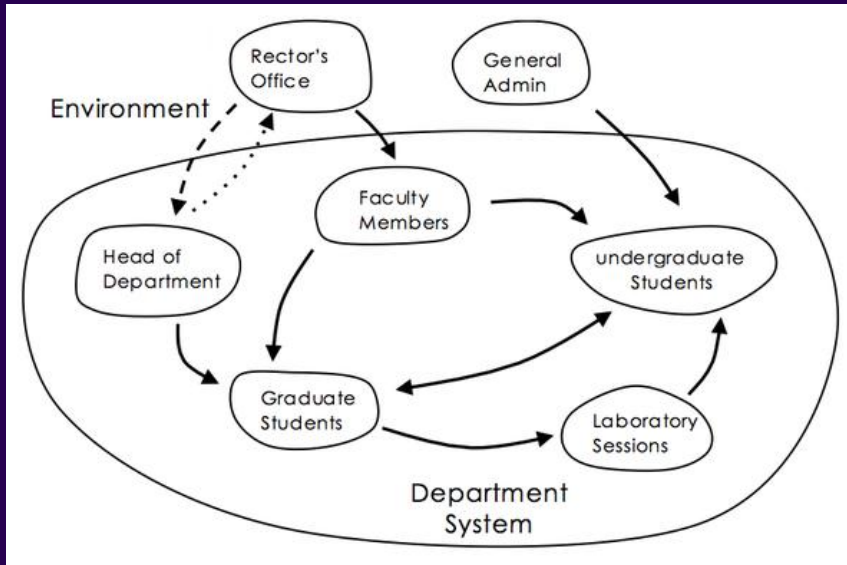
Main structure that produce processes which shape outcomes.

A **comprehensive** framework that **inform** about the different **elements of the systems.**

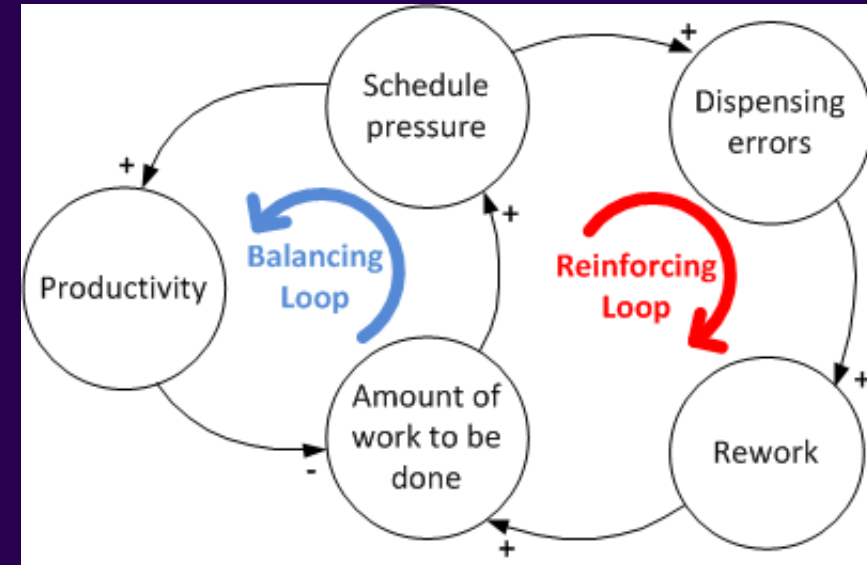
SEIPS 2.0 (Holden et. Al., 2013)

# The challenge to *visualise* healthcare systems

Some tools are focused in explore one type of element



**Influence diagram**  
(From Johnson, 2017)



**Causal loops diagram**  
(From Shire, Jun and Robinson, 2018)

# Outcomes remain as an underexplored dimension

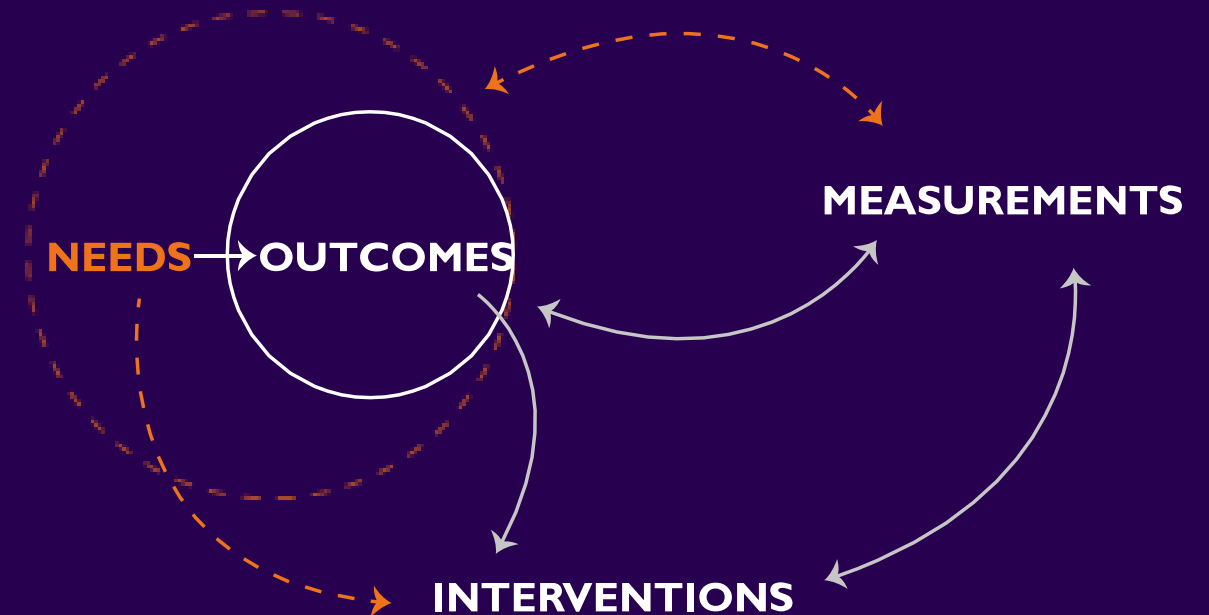
# Why outcome-based?

1. Outcomes imply a **need** (a reason)

2. Outcomes should be a **general agreement** towards the goal and aims of the system.

3. Healthcare is trying to integrate **real-world outcomes** and consider idiosyncratic elements

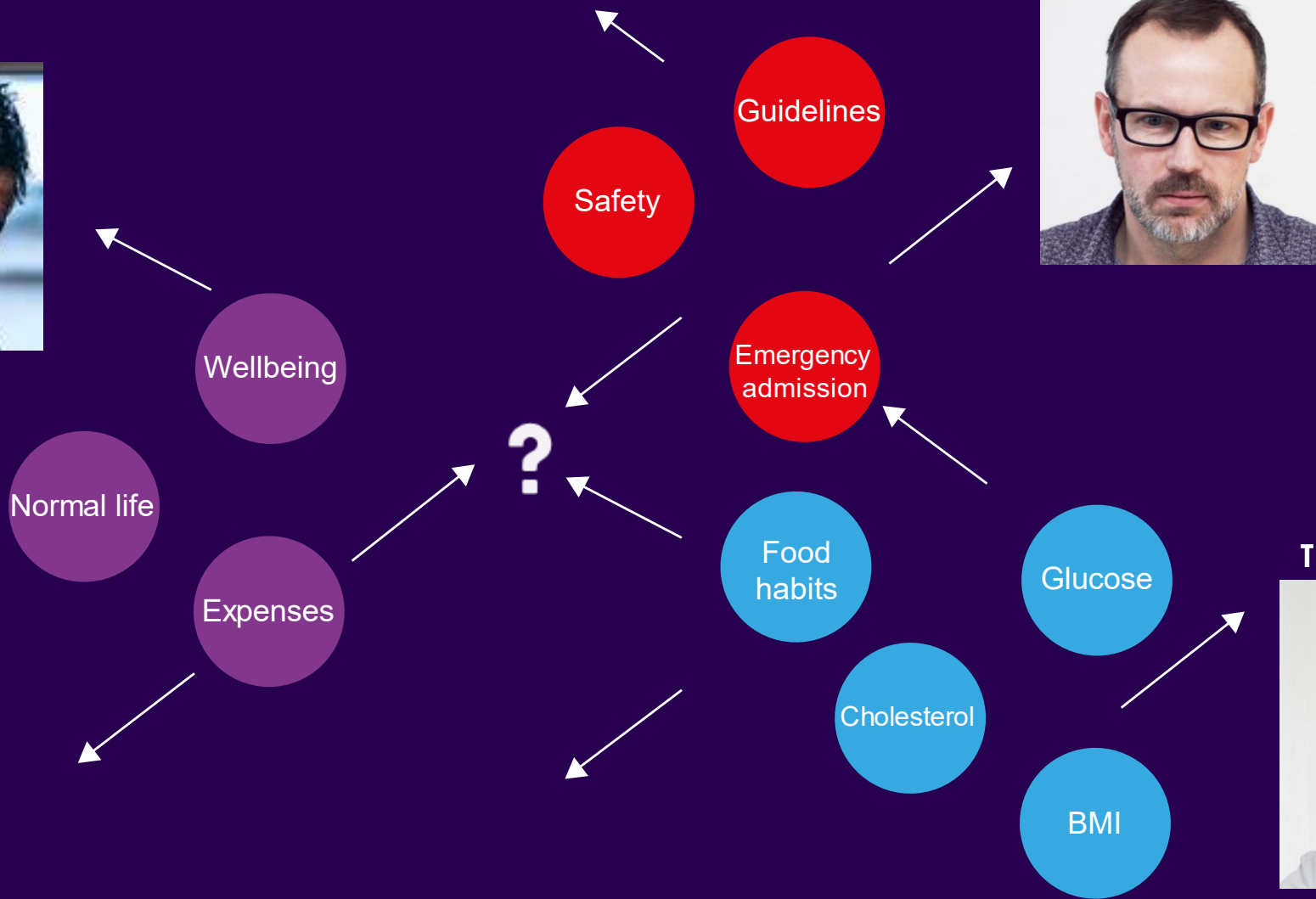
Tseklevs, E., & Cooper, R. (2017)







THE PATIENT



THE COMMISSIONER

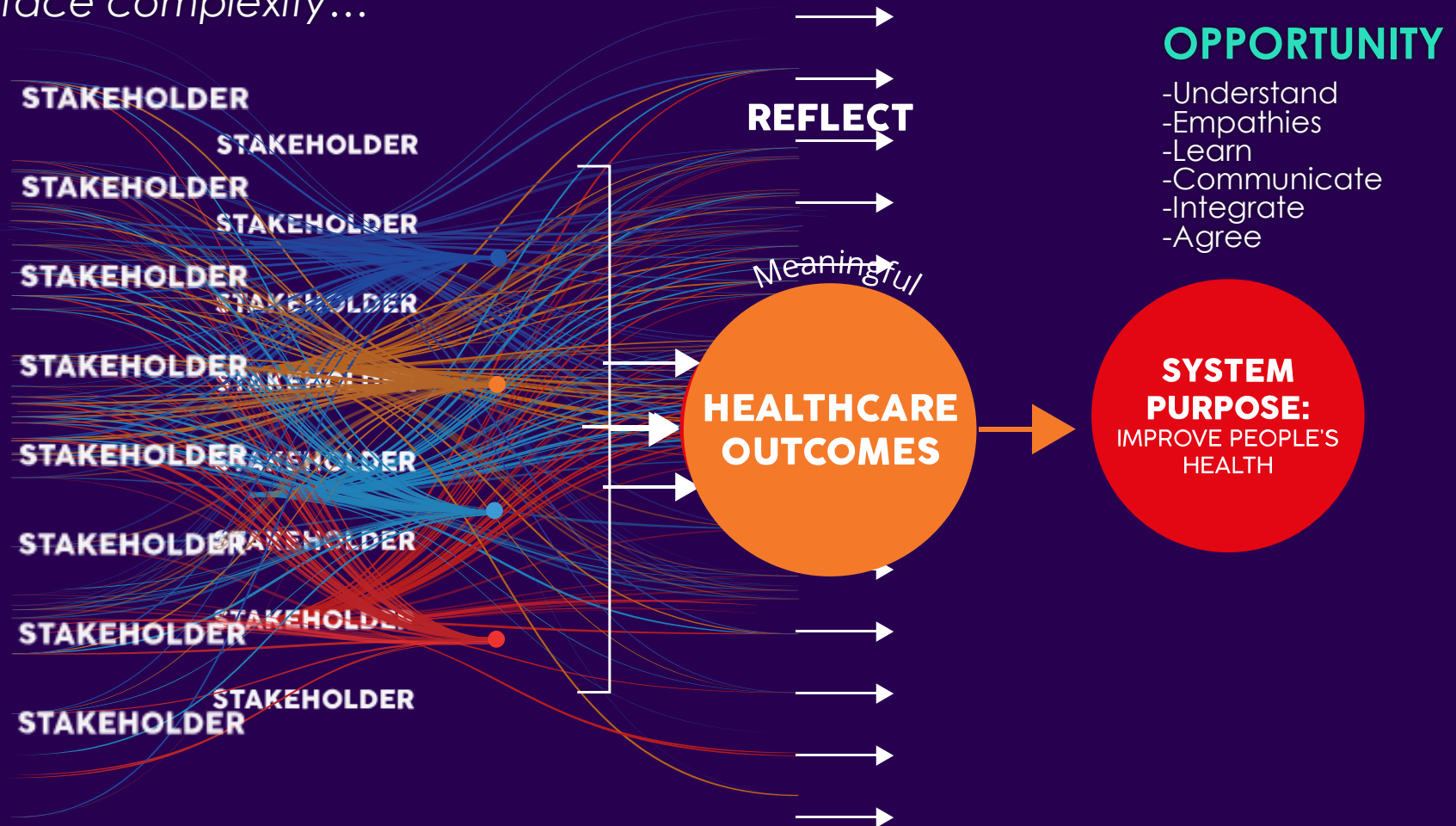
It *looks* like different outcomes trigger different paths

THE NUTRITIONIST



# An outcome-based approach

*A step forward to face complexity...*



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# Understanding healthcare system through outcomes

Consider what is **meaningful** for all the stakeholders in healthcare

Defining **expected effects/changes** based in **meaningful needs**.

A **common language** of the system

HOLISTIC HEALTHCARE *OUTCOME*  
TOWARDS *PURPOSE FINDING*

**Align** the system to the shared goals, towards an active system.

# How to enable the understanding systems?

Methods to facilitate the *grasp* of complexity

Graphic methods

visualisations

- Assist to **communicate complex and big** amount of data (Jones and Bowes, 2016).
- **Facilitate sensemaking** from multiple perspectives (Jones and Bowes, 2017).
- Increase the **quality of knowledge** sharing in participatory techniques (Comi, Bischof and Eppler, 2013).
- Foster elicitation of **experiential knowledge** (Bresciani and Eppler, 2009).
- Increase **mutual orientation** of participants (Comi and Eppler, 2011).

# The objective of the study

- Commonly good to **use visuals** to **communicate** complex problems.
- Could be the **facilitators** of the following tool.

To explore how **designers visualise** complex interactions between multiple **outcomes** of the system to align the system.

- A step **forward** into **the bigger picture** of systems.

# METHODOLOGY

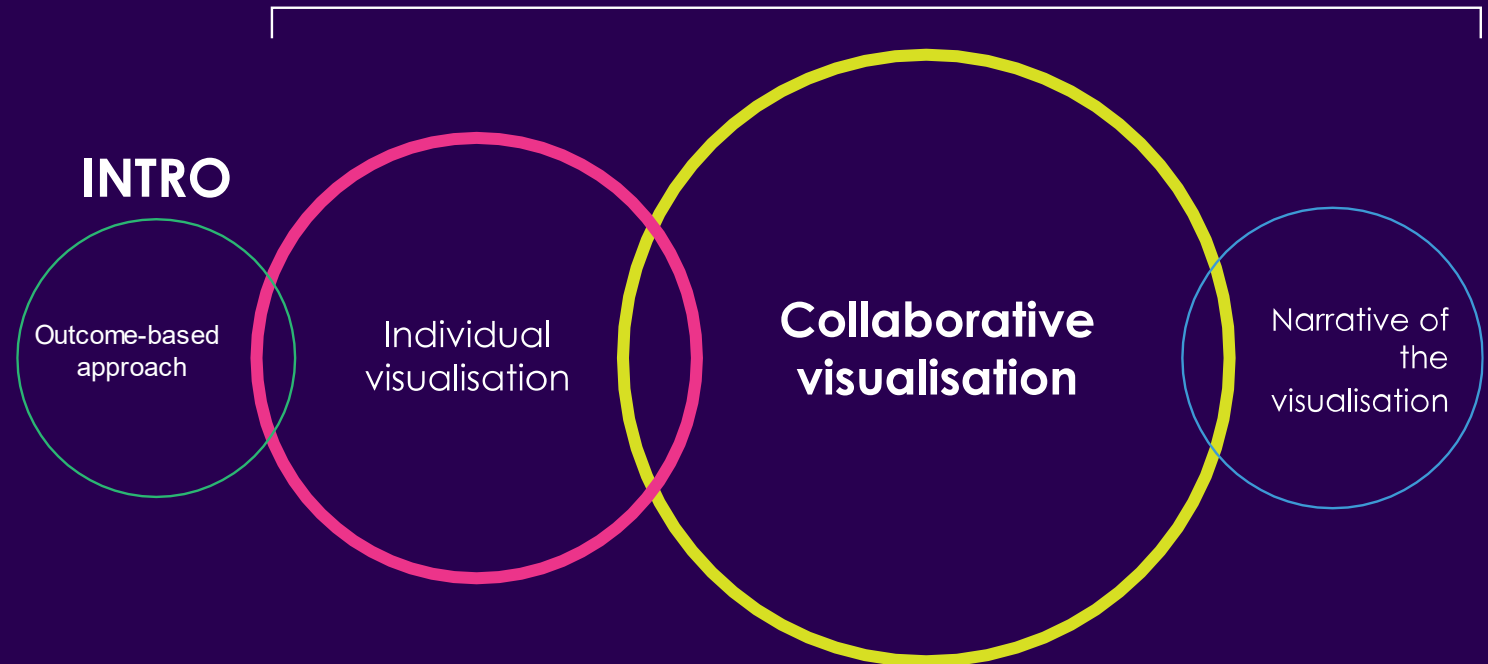
METHODOLOGY

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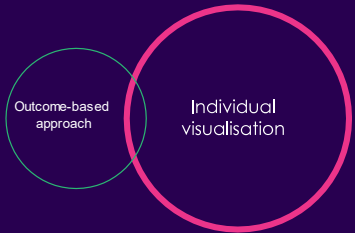
# Workshop (overall process)

Use of visualisation as  
**FACILITATION** technique

- **Participants:** 25 designers, working in 5 members teams.
- 3 facilitators



# Process

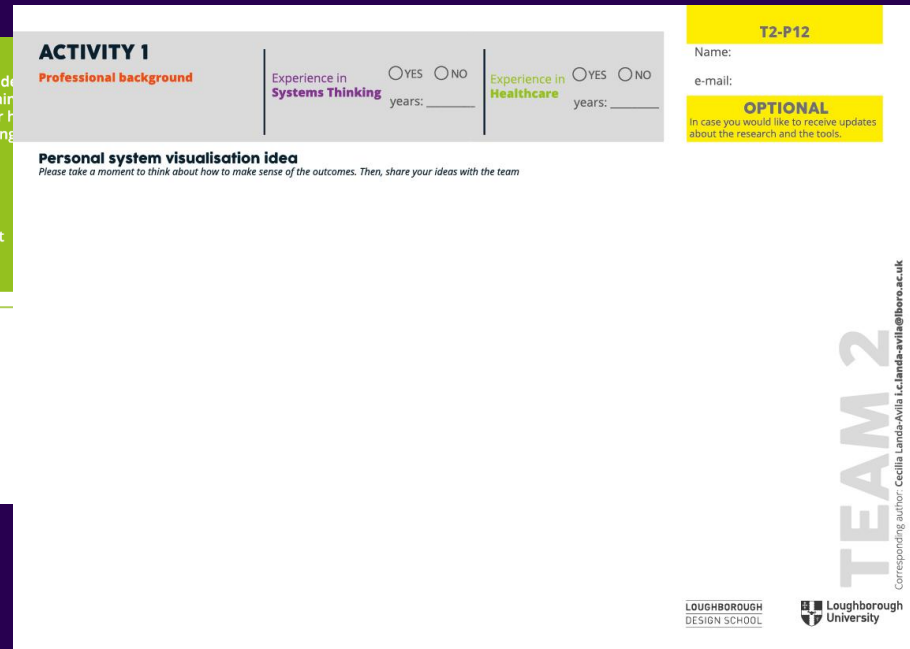
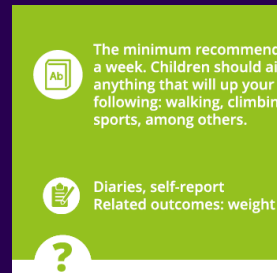
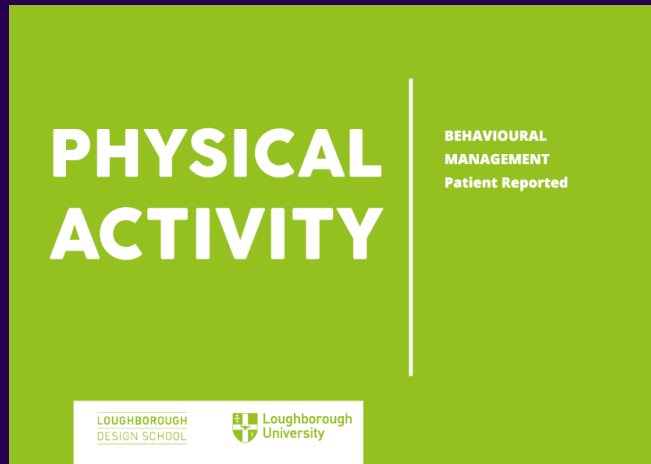


Healthcare outcome familiarisation

Discussion

Individual visualization (brainstorming)

Narrative of visualisations



The “only rule” was to use at least one outcome of each category

Each participant received a set of outcome cards.



# Process

Collaborative  
visualisation

“Only rule”: use at  
least one outcome  
for each group

Provoke creating  
connections

Narrate the  
visualisation

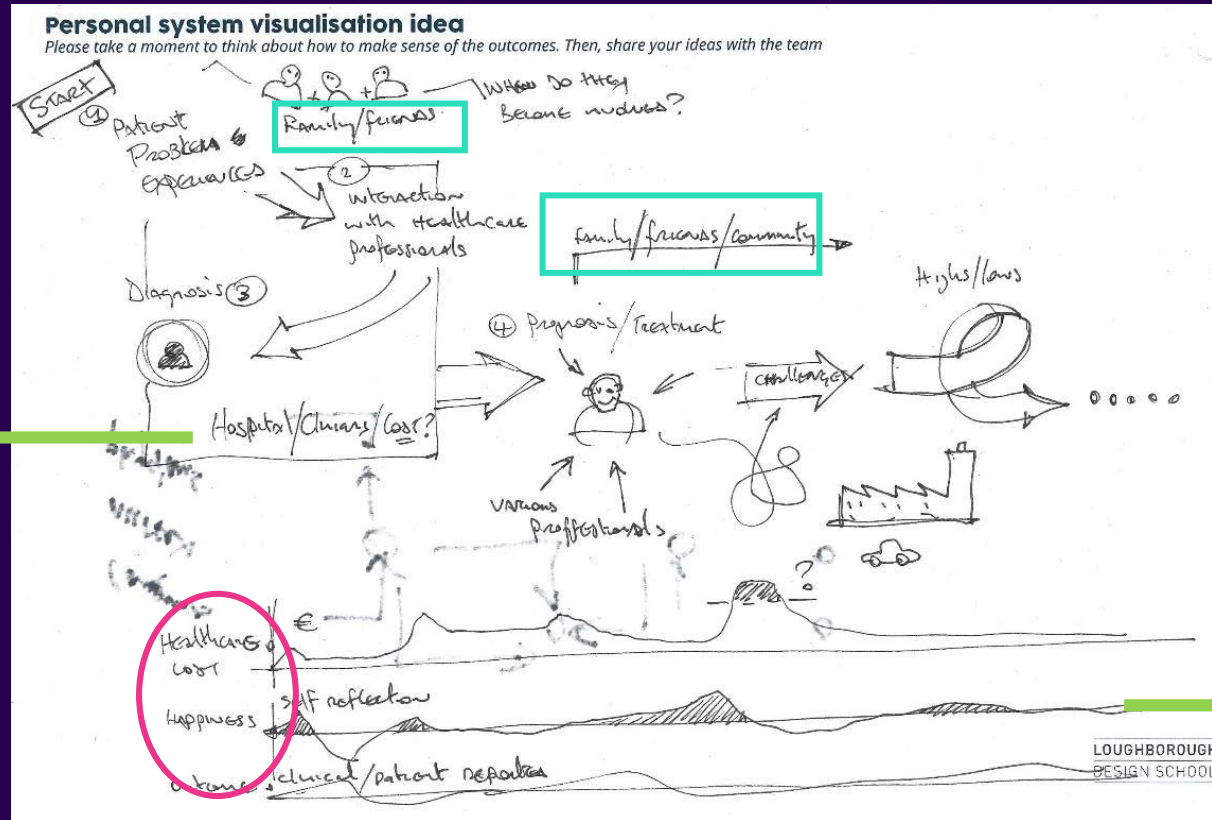


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# RESULTS

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# Making sense through outcomes (individual)



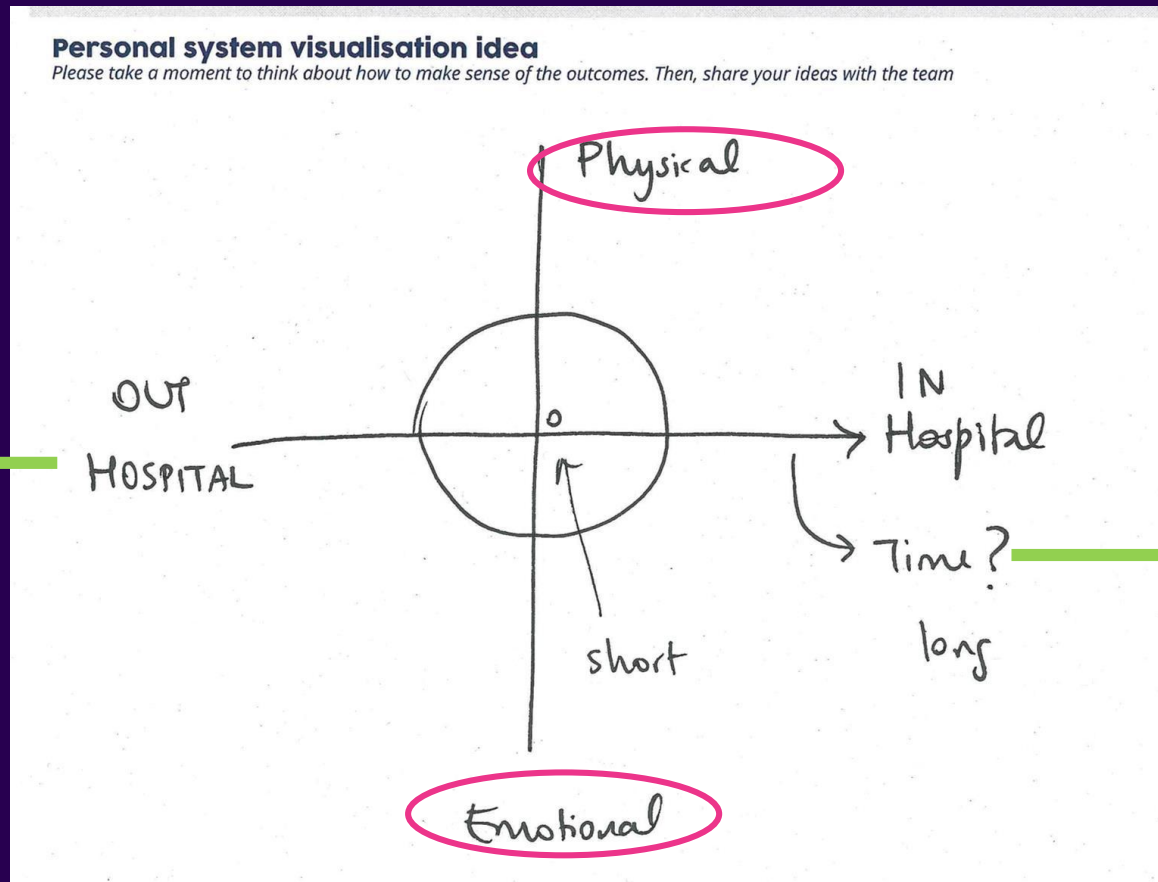
Geographic references

## Identify:

- visual patterns and main structures
- Main outcomes
- Key stakeholders

Timeline Intensity

# Making sense through outcomes (individual)



- No stakeholders
- New “categories” for outcomes.

Individual structures				Main outcomes and structure
TEAM 1				
				Emotional Physical Self-care (H) Blood pressure Wellbeing (H) Cost (H)
Timeline + place	Network + place	A to B (multiple) + Loops	Venn	Place
TEAM 2				
				Happiness Clinical Engagement Psychosocial-
Timeline + hierarchy	Clusters + Loops	Concept map + -Intensity		N/D
TEAM 3				
				Happiness Cost PROM Patient satisfaction
Timeline + intensity + places	Clusters + intensity	A to B + Loops		Intensity
TEAM 4				
				Behavioural (all) Function Satisfaction Survival
Concept map	Classification (symptoms, functions)	Patient-centred + intensity		N/D
TEAM 5				
				Happiness Survival Symptoms Cost Complications
Classification (happiness)	A to B (multiple choices)	Concept map		N/D



# Making sense through outcomes (individual)

# Most used structures (individual)

## MOST USED



### INTENSITY

Display outcomes as fluctuating measurement

## SECOND MOST USED

(draw)



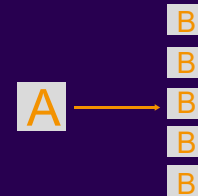
### TIMELINE



### PLACE

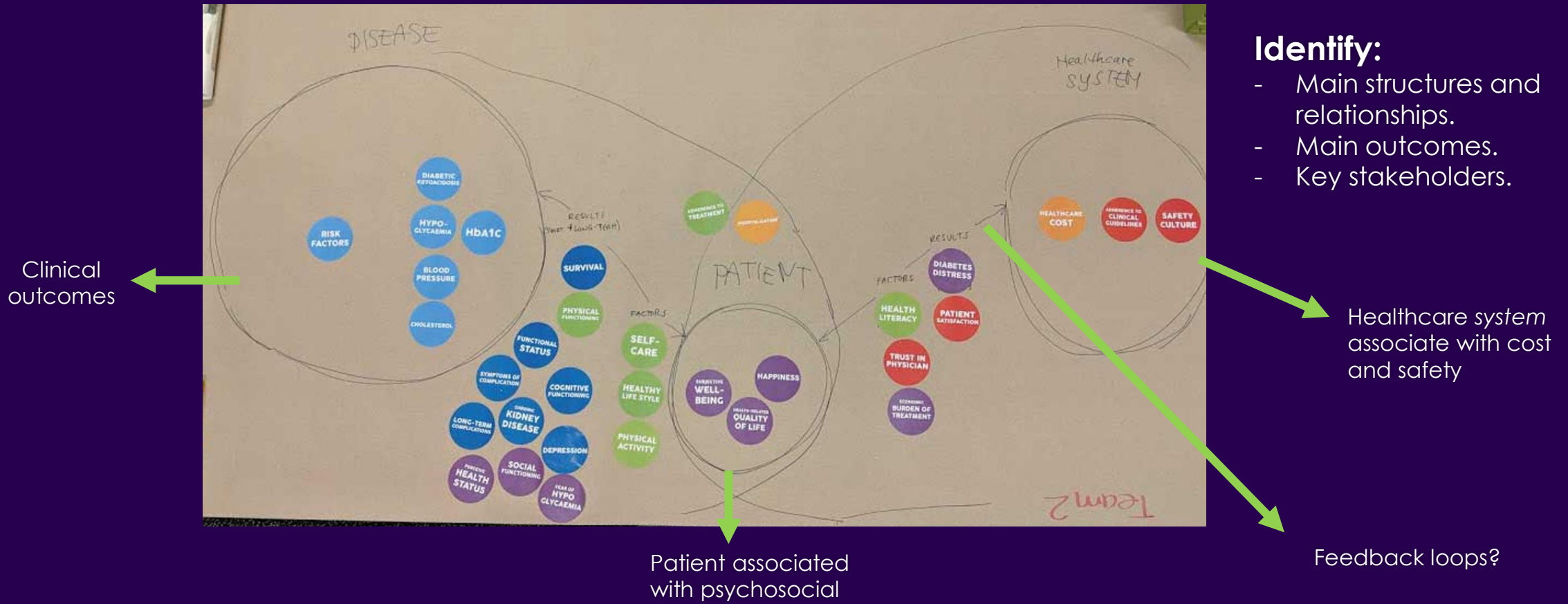


### CAUSAL LOOP



### IMPACT

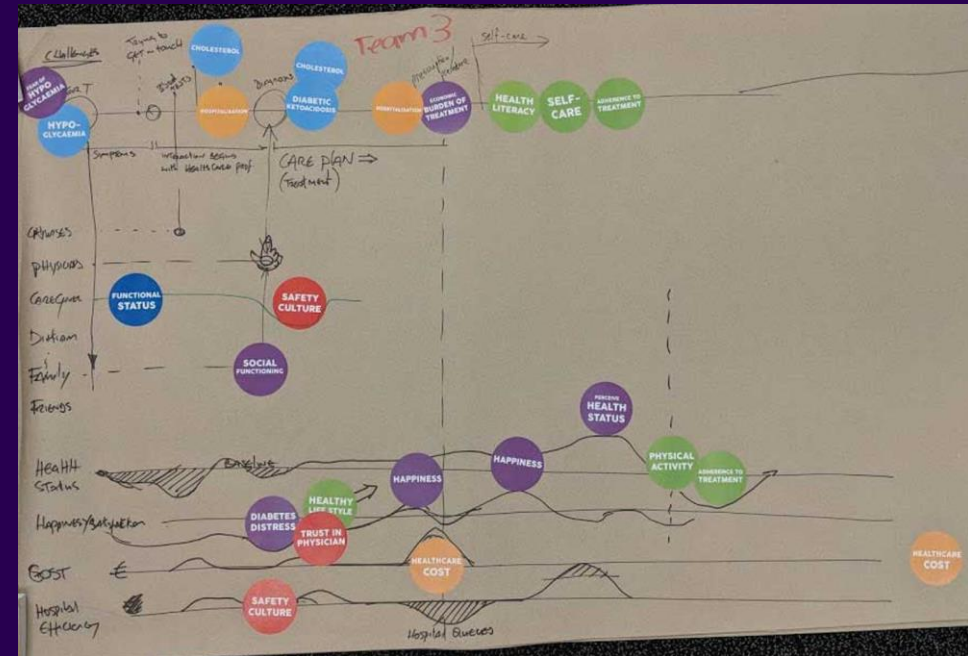
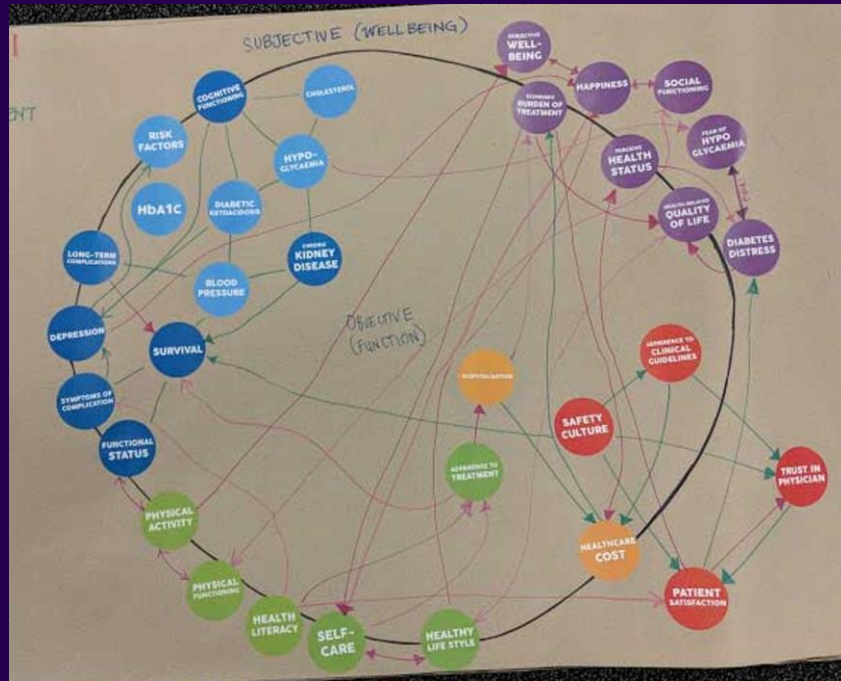
# Making sense through outcomes (teams)



## Identify:

- Main structures and relationships.
- Main outcomes.
- Key stakeholders.

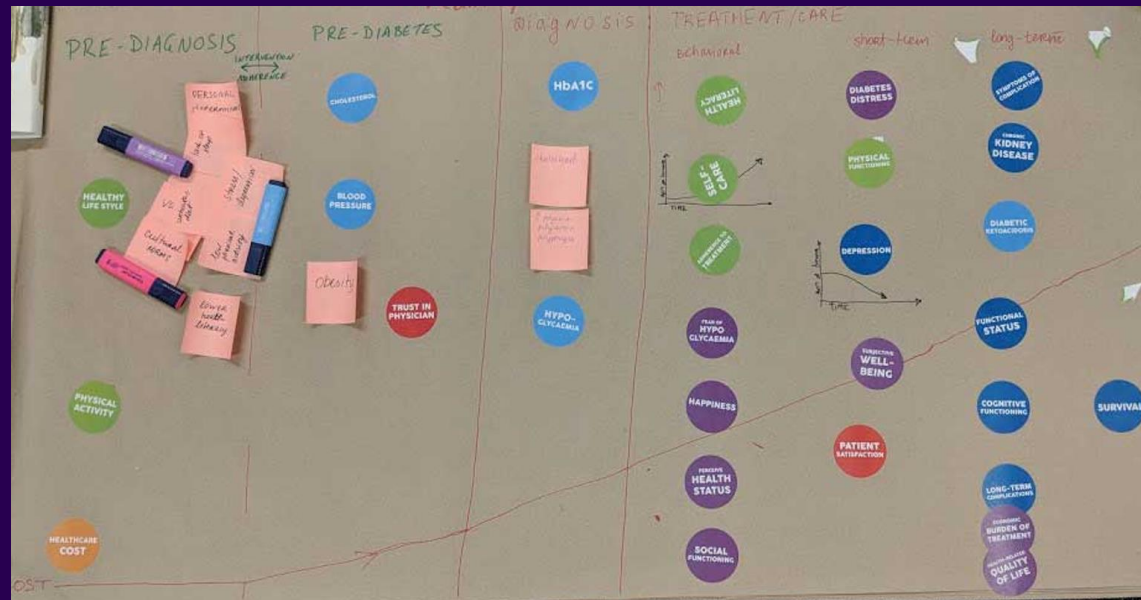
# Making sense through outcomes (teams)



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# Making sense through outcomes (teams)



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# Thematic analysis of narratives (teams)

**Healthcare system as external agent.**

Circle to represent “equality”

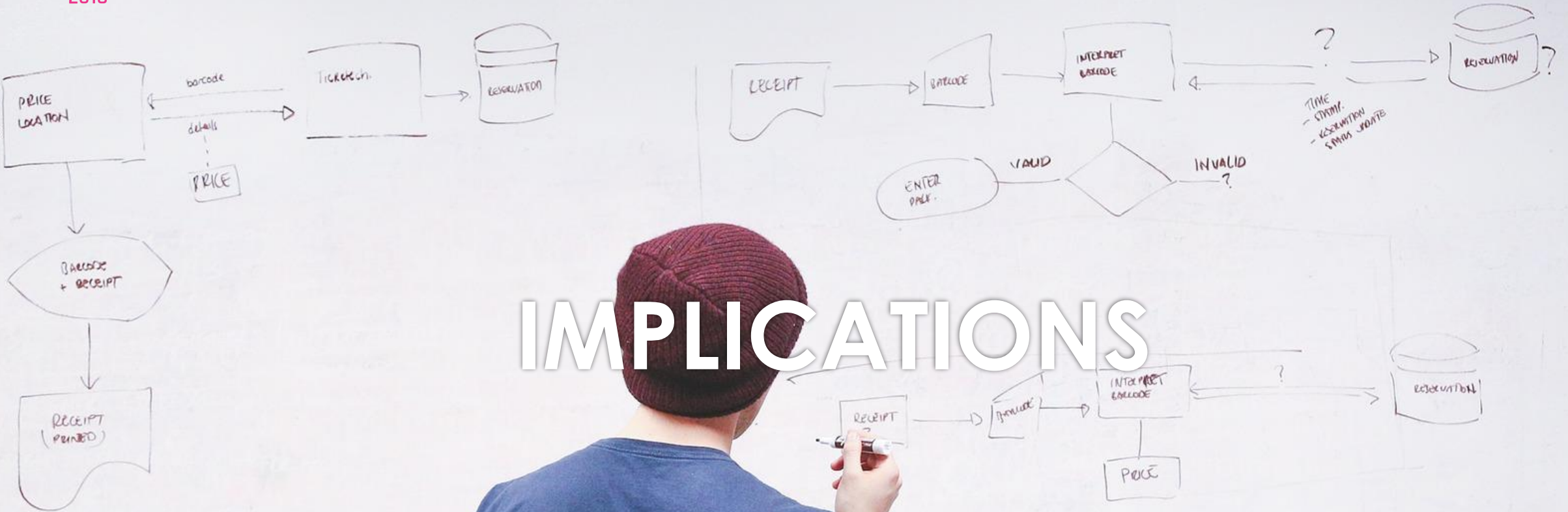
**Disease as objective element of the system (clinical).**

**Patient as central**

Psychosocial outcomes as something to construct on the long-term.

**“This map is actually very clean to the real *mess*”**

“Maps (visualization) ) are great and *simple* to identify correlations and improvement areas.”



# IMPLICATIONS

# Need for *extra* boundaries

Elements of the system were added to help participants to deal with *smaller* units.

# Outcomes as flexible and well appreciated element

Element to provoke meaningful discussions

# There is not a clear team pattern

Although individually there were dominant structures, teams did not show a dominant pattern across visualisations.

# CONCLUSIONS

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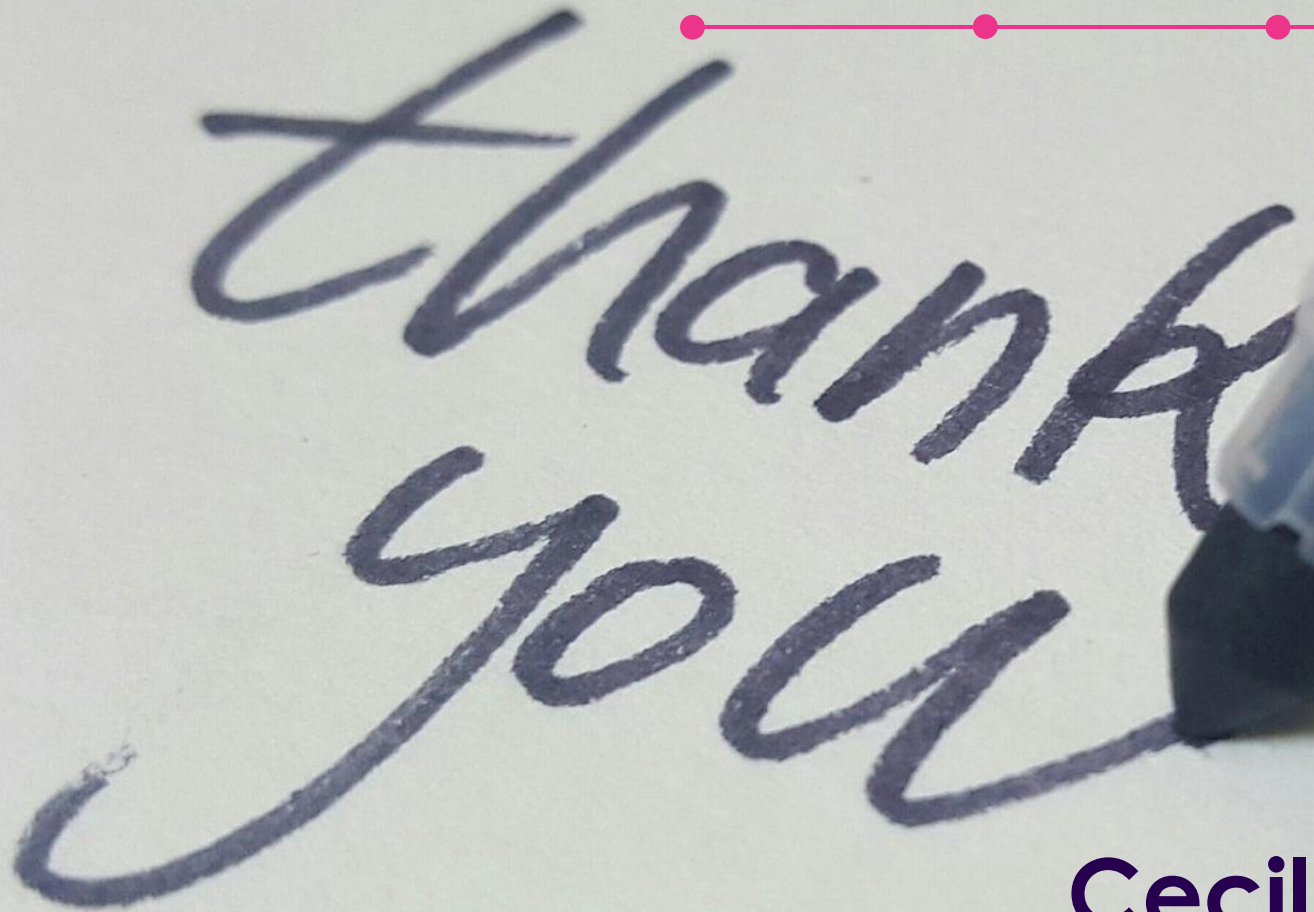
# Conclusions

- **Visualising healthcare system through outcomes as promising method**
  - Positive feedback for the design community.
  - Less support needed than expected.
  - Outcomes did not provoke a reductionist effect.

# Future work

- **Improve outcomes**
  - Increase the number of outcomes and their information.
  - Explore the technique with other stakeholders.





Thank  
you

**Cecilia Landa-Avila**

[i.c.landa-avila@lboro.ac.uk](mailto:i.c.landa-avila@lboro.ac.uk)

@iclanda