

# Co-design & Complex Intervention Development

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Part of the NIHR ARC NWC  
MIDAS Complex Interventions  
seminar series

10<sup>th</sup> February 2022  
(MIDAS=Methodological Innovation, Development,  
Adaptation & Support Theme)

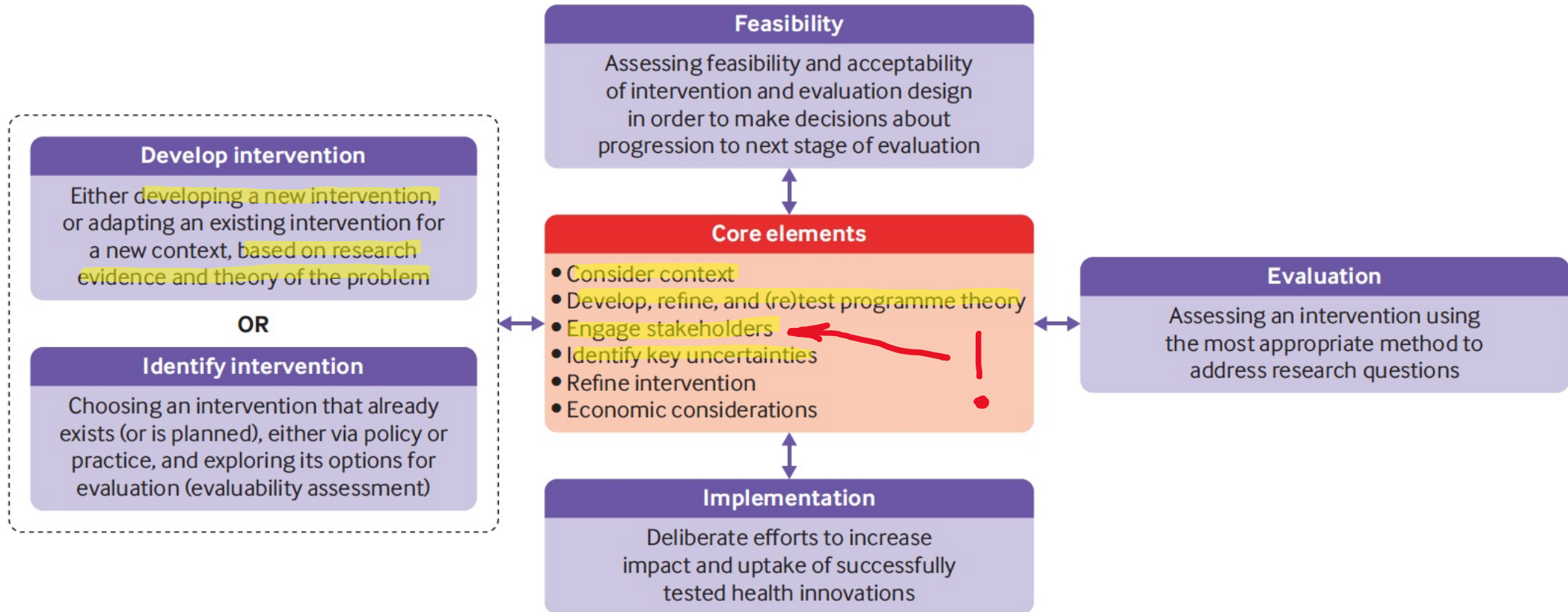


**Joe Langley**  
(PhD, MEng)

Lab4Living

@JoeLangley\_  
j.Langley@shu.ac.uk

# Complex interventions



BMJ 2021;374:n2061 | doi: 10.1136/bmj.n2061

## Developing Complex Interventions - Case Studies:

- Function First

(Project ID: 17/45/22 <https://fundingawards.nihr.ac.uk/award/17/45/22>)

- Serious Incident Investigations

(Project ID: 18/10/02 <https://fundingawards.nihr.ac.uk/award/18/10/02>)

## Co-design & Creativity

## Sources - coproduction of healthcare interventions:

- Rai, T., Hinton, L., McManus, R. J., & Pope, C. What would it take to meaningfully attend to ethnicity and race in health research? Learning from a trial intervention development study. *Sociology of Health & Illness*. 2022;00:1– 16. <https://doi.org/10.1111/1467-9566.13431>
- Rose D and Kalathil J (2019) Power, Privilege and Knowledge: the Untenable Promise of Co-production in Mental “Health”. *Front. Sociol.* 4:57. doi: 10.3389/fsoc.2019.00057
- Skivington K, Matthews L, Simpson S A, Craig P, Baird J, Blazeby J M et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance *BMJ* 2021; 374 :n2061 doi:10.1136/bmj.n2061
- O’Cathain A, Croot L, Duncan E, et al. Guidance on how to develop complex interventions to improve health and healthcare. *BMJ Open* 2019;9:e029954. doi: 10.1136/bmjopen-2019-029954
- Rycroft-Malone J, Seers K, et al. What counts as evidence in evidence-based practice? *J Adv Nurs*. 2004 Jul;47(1):81-90. doi: 10.1111/j.1365-2648.2004.03068.x. PMID: 15186471.

## Sources - case study 1, 'Function First':

- Protocol paper: Law, R., Williams, L., Langley, J., Burton, C., Hall, B., Hiscock, J., Morrison, V., Lemmey, A., Patridge, R., Lovell-Smith, C., Gallanders, J., Williams, N. H., 'Function First - Be Active, Stay Independent' - Promoting physical function and physical activity in people with long-term conditions by primary care: A protocol for a realist synthesis with embedded co-production and co-design. *BMJ Open*, 2020; 10:e035686. doi: 10.1136/bmjopen-2019-035686, <https://bmjopen.bmj.com/content/10/2/e035686>
- Output paper: Law, R., Williams, L., Langley, J., Burton, C., Hall, B., Hiscock, J., Morrison, V., Lemmey, A., Patridge, R., Lovell-Smith, C., Gallanders, J., Williams, N. H., (2021) "'Function First': How to promote physical activity and physical function in people with long-term conditions managed in primary care? A study combining realist and co-design methods." *BMJ Open*, (in press)
- Monograph: Law, R., Williams, L., Langley, J., Burton, C., Hall, B., Hiscock, J., Morrison, V., Lemmey, A., Patridge, R., Lovell-Smith, C., Gallanders, J., Williams, N. H., (2021) "Promoting physical activity and physical function in people with long-term conditions by primary care: Realist synthesis with co-design (Function First)." NIHR Journals Library, Southampton (UK); (in press)

## Sources - Codesign games:

- Langley, J; Partridge, R; Law, R; Williams, L; Burton, C; Hall, B; Hiscock, J; Morrison, V; Lemmey, A; Cooney, J; Lovell-Smith, C; Gallanders, J; Williams, N, 'Playing' with Evidence; combining creative co-design methods with realist evidence synthesis. Design4Health, Amsterdam, July 2020, Vol 2, page 96, <https://research.shu.ac.uk/design4health/wp-content/uploads/2020/09/D4H2020-Proceedings-Vol-2.pdf>
- Quesenbery, Whitney, and Kevin Brooks. 2010. Storytelling for User Experience: Crafting Stories for Better Design. Edited by Marta Justak. New York: Rosenfeld Media.
- Martin, Bella;, and Bruce M Hanington. 2012. Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions. Beverly, MA: Rockport Publishers.
- Valente, Andrea, and Emanuela Marchetti. 2015. "Make and Play: Card Games as Tangible and Playable Knowledge Representation Boundary Objects." Proceedings - IEEE 15th International Conference on Advanced Learning Technologies: Advanced Technologies for Supporting Open Access to Formal and Informal Learning, ICALT 2015, 137-141. doi:10.1109/ICALT.2015.31.
- Brandt, Eva. 2006. "Designing Exploratory Design Games: A Framework for Participation in Participatory Design?" Proceedings of the Ninth Participatory Design Conference 2006, 57-66. doi:10.1145/1147261.1147271

## Sources - design practice as interdisciplinary common language:

- Henderson K. Flexible Sketches and Inflexible Data Bases: Visual Communication, Conscripted Devices, and Boundary Objects in Design Engineering. Science, Technology, & Human Values. 1991;16(4):448-473. doi:10.1177/016224399101600402

## Sources – Codesign as informal-mutual learning or social learning:

- Calvo, M. and Sclater, M. (2021), Creating Spaces for Collaboration in Community Co-design. Int J Art Des Educ, 40: 232-250.  
<https://doi.org/10.1111/jade.12349>

## Sources – socially distant co-design:

- Two publications about socially distant co-design during the pandemic at <https://lab4living.org.uk/projects/co-design-during-covid/>

## Sources:

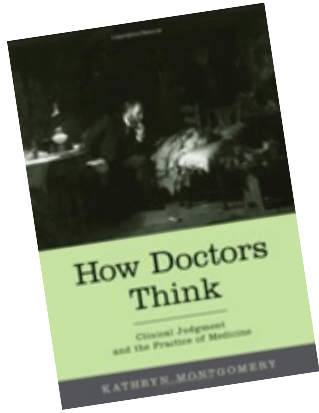
**EXCLUSIVE!!!** --- *pre-publication notices ... coming soon:*

Langley, J., Knowles, S. & Ward, V. (2021) “Conducting a research co-production project; a principle based approach” Ch In: Graham, I., Rycroft-Malone, J., Kothari, A. & McCutcheon, C. (ed.) *Research Co-production in Health and Social Care*, Wiley

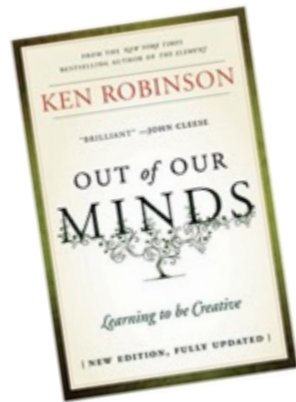
Evidence & Policy Special Issue – {working title “Creativity & Coproduction”}



## Sources:

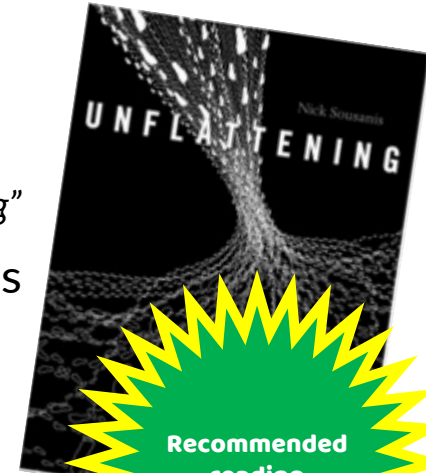
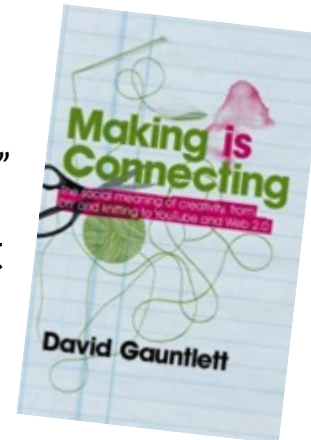


*"How Doctors Think: clinical judgement and the practice of medicine"*  
Kathryn Montgomery



*"Out of Our Minds: learning to be creative"*  
Ken Robinson

*"Making is Connecting"*  
David Gauntlett



*"Unflattening"*  
Nick Sousanis



## Developing Complex Interventions - Case Studies:

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## Co-design & Creativity



# function first

be active, stay independent

# the team

## Joint Co-PI's

Dr Becki Law and Professor Nefyn Williams

## Co-I's

*Dr Joe Langley*

*Professor Christopher Burton,*

*Dr Beth Hall*

*Dr Julia Hiscock*

*Dr Lynne Williams*

*Professor Valerie Morrison*

*Professor Andrew Lemmey*

*Dr Jennifer Cooney*

*Mr John Gallanders (PPI)*

*Ms Candida Lovell-Smith (PPI)*

## Lab4Living

### Design Research Team

*Dr Remi Bec*

*Dr Rebecca Partridge*

*Dr Gemma Wheeler*

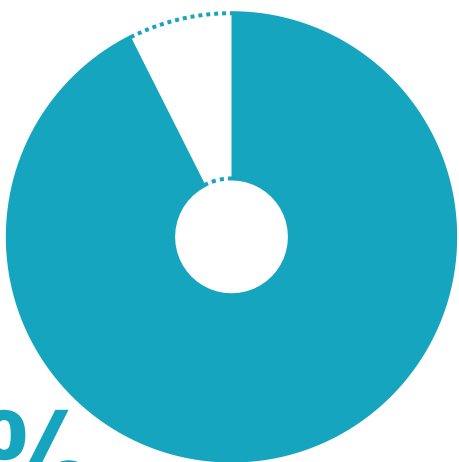
*Chris Redford*



*This project is funded by the National Institute for Health Research (NIHR) Health Services and Delivery Research programme (17/45/22). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.*

# the rationale

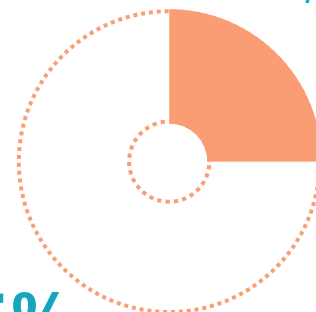
Primary care  
accounts for



**90%**  
of all NHS  
patient contacts

## “Problems performing usual activities”

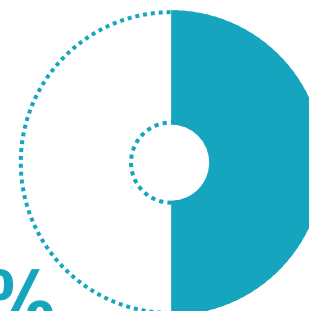
reported by



**25%**  
people with 1 long-term  
condition

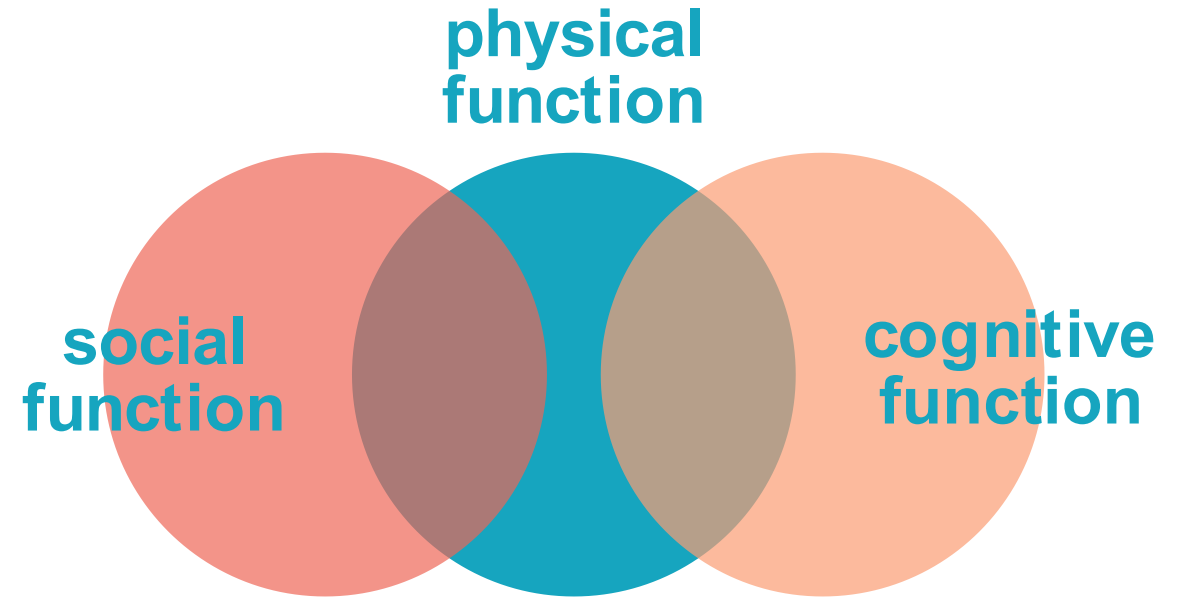
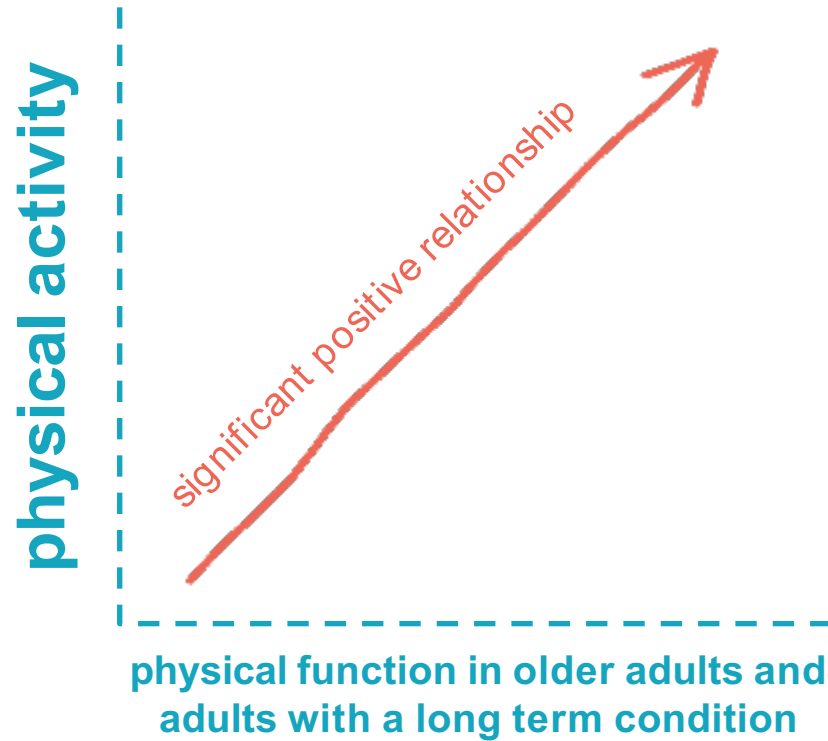


**65%**  
people with 3 or more  
long-term conditions



**50%**  
of all GP appointments

# the rationale



The more physical function a person has, the more they are able to do the things they need and want to do.

the rationale

it's really complex

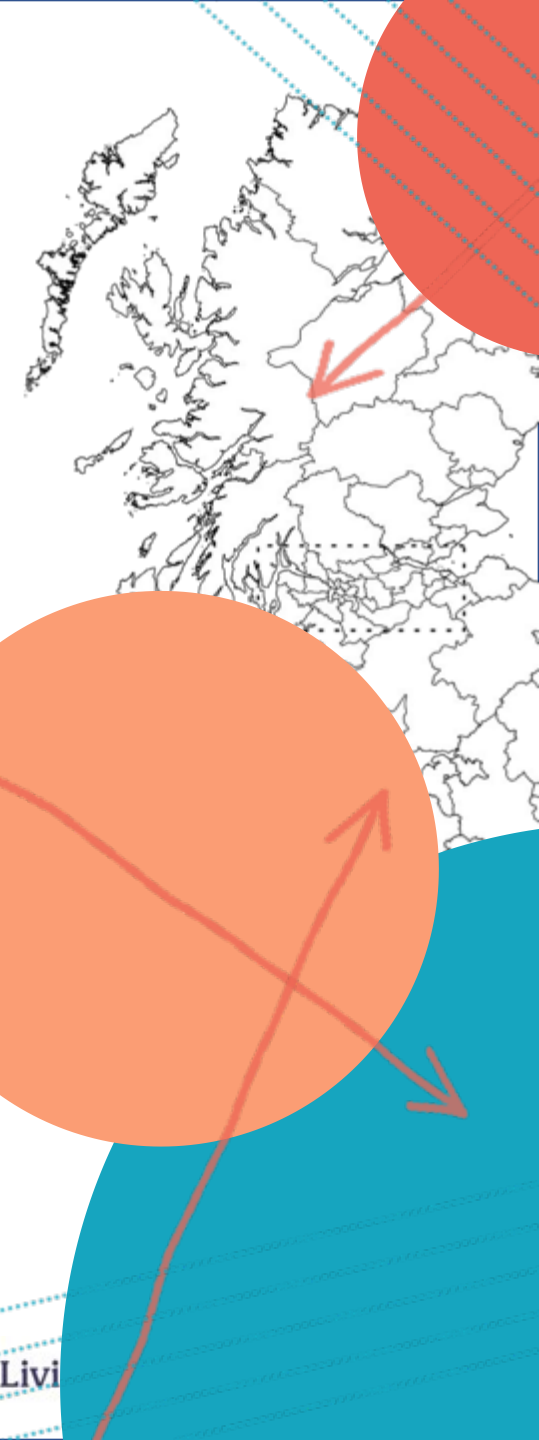
Huge variety of different  
long-term conditions

geography

local resources

primary care  
setting

individual's lives,  
home, family, work  
& finances



# the rationale

## **question:**

how best can primary care help reduce declining physical function and physical activity in people with long term conditions?

## **methods:**

realist evidence synthesis

&

embedded co-production and co-design





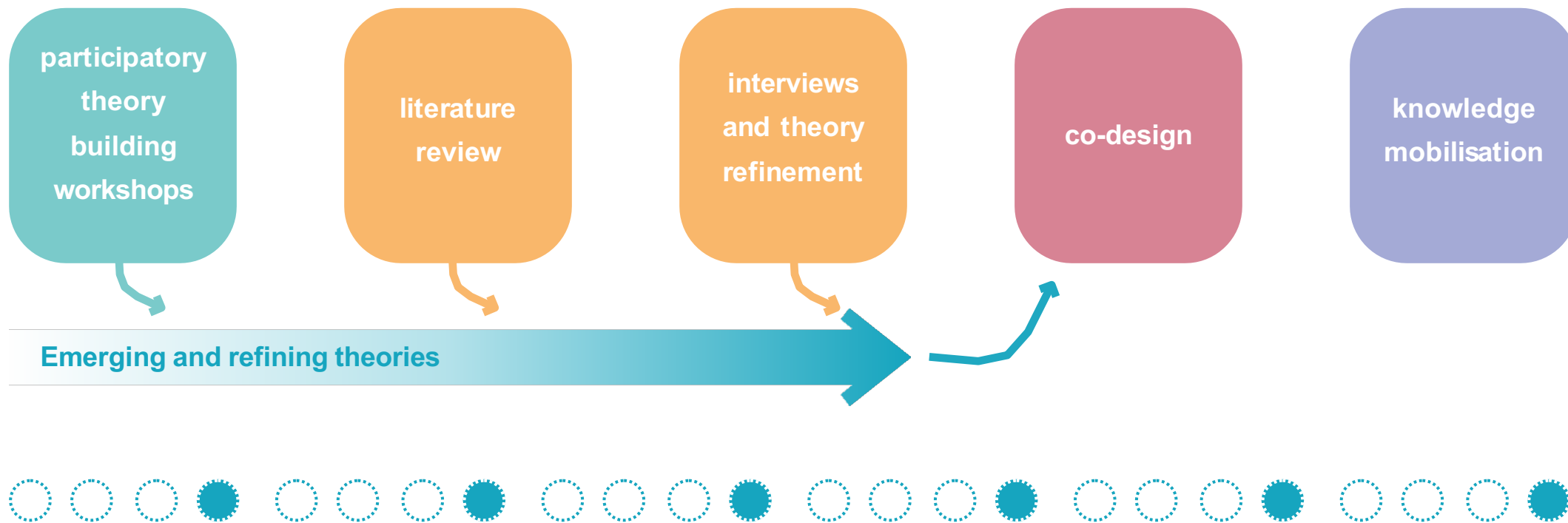
# the (planned) process



monthly team meetings



project advisory group meetings



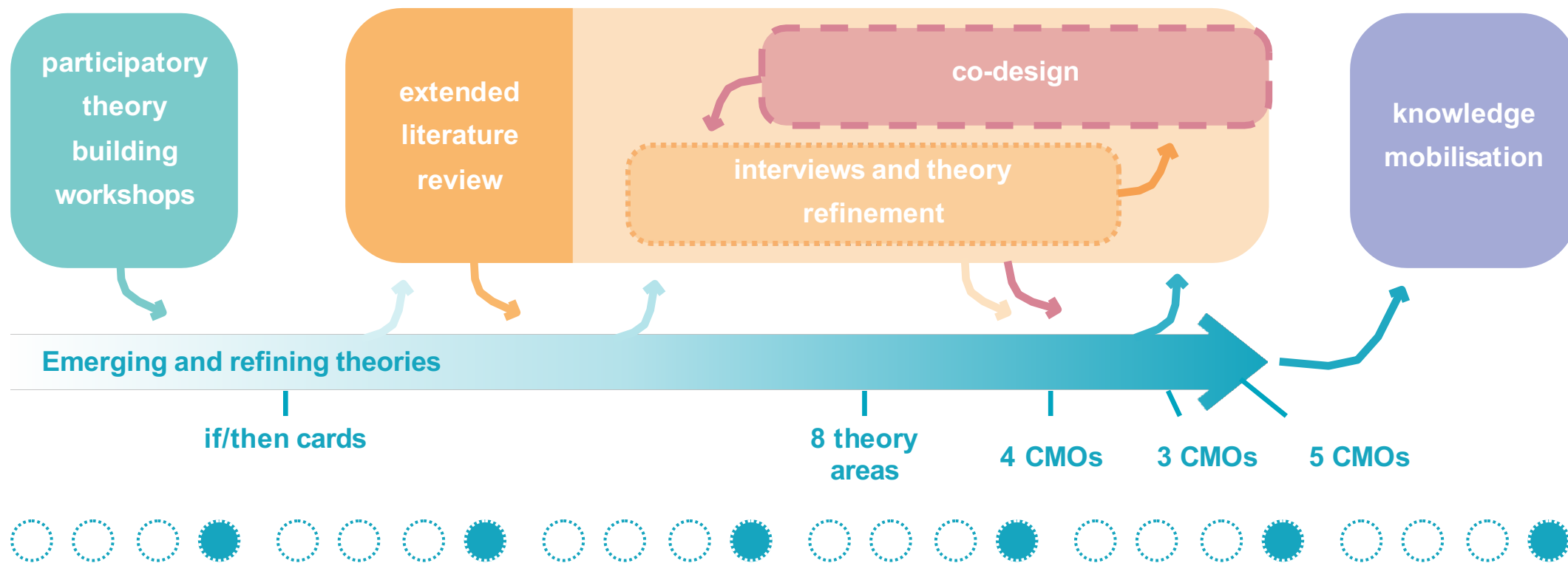
# the (actual) process



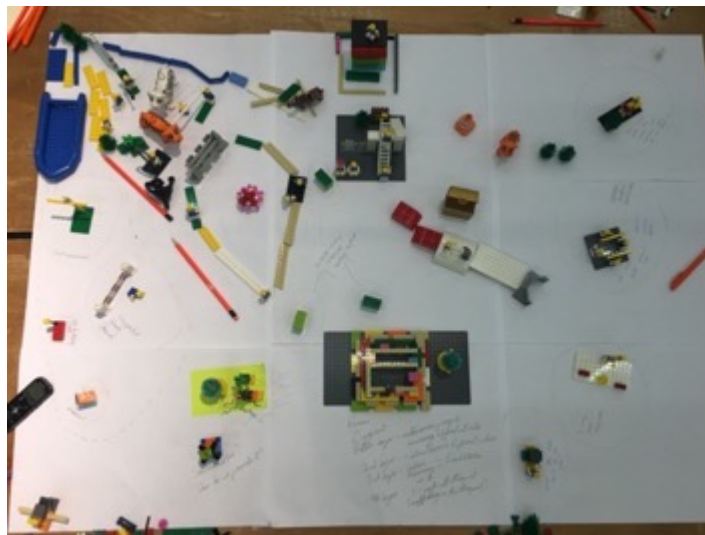
monthly team meetings



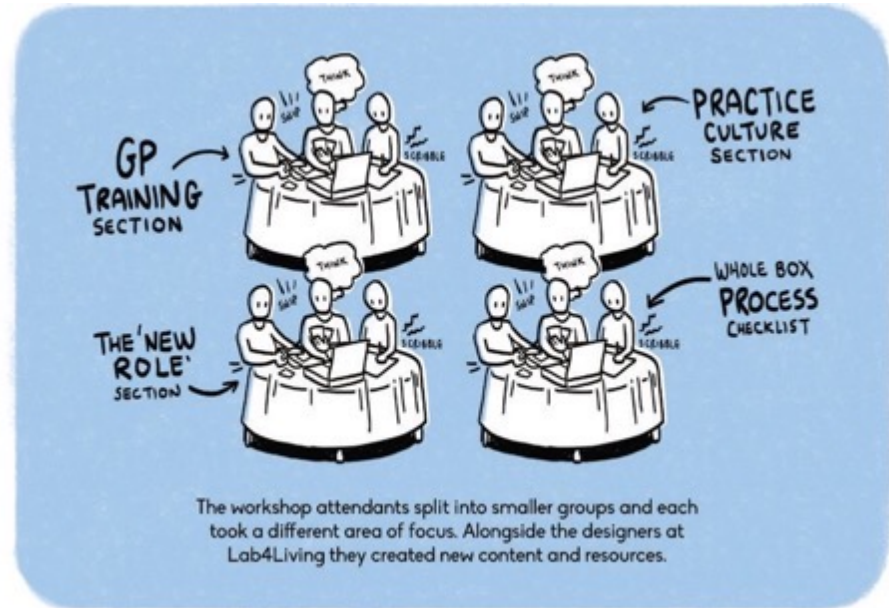
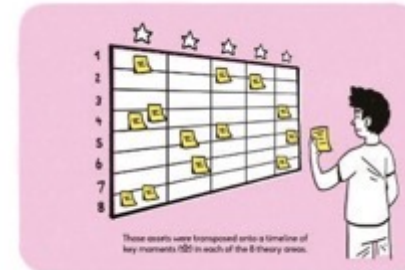
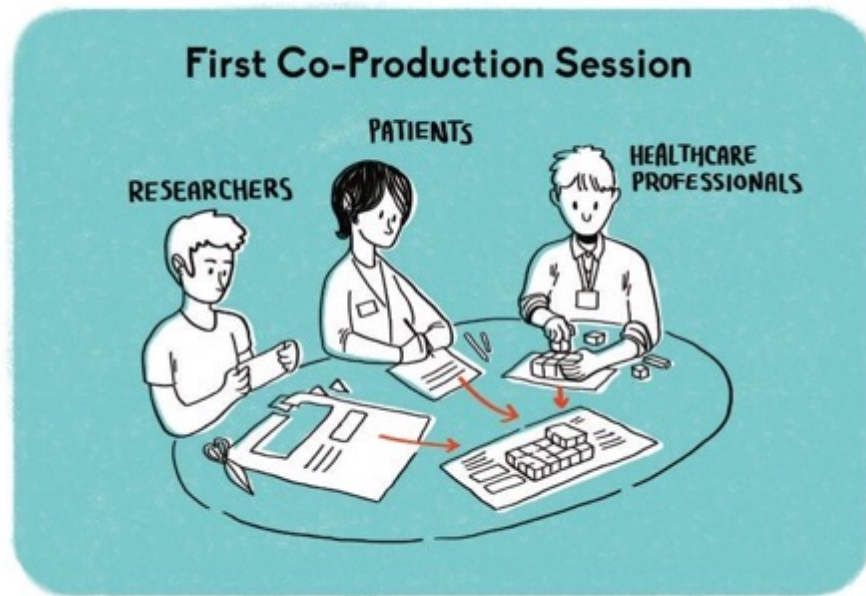
project advisory group meetings



# theory building workshops

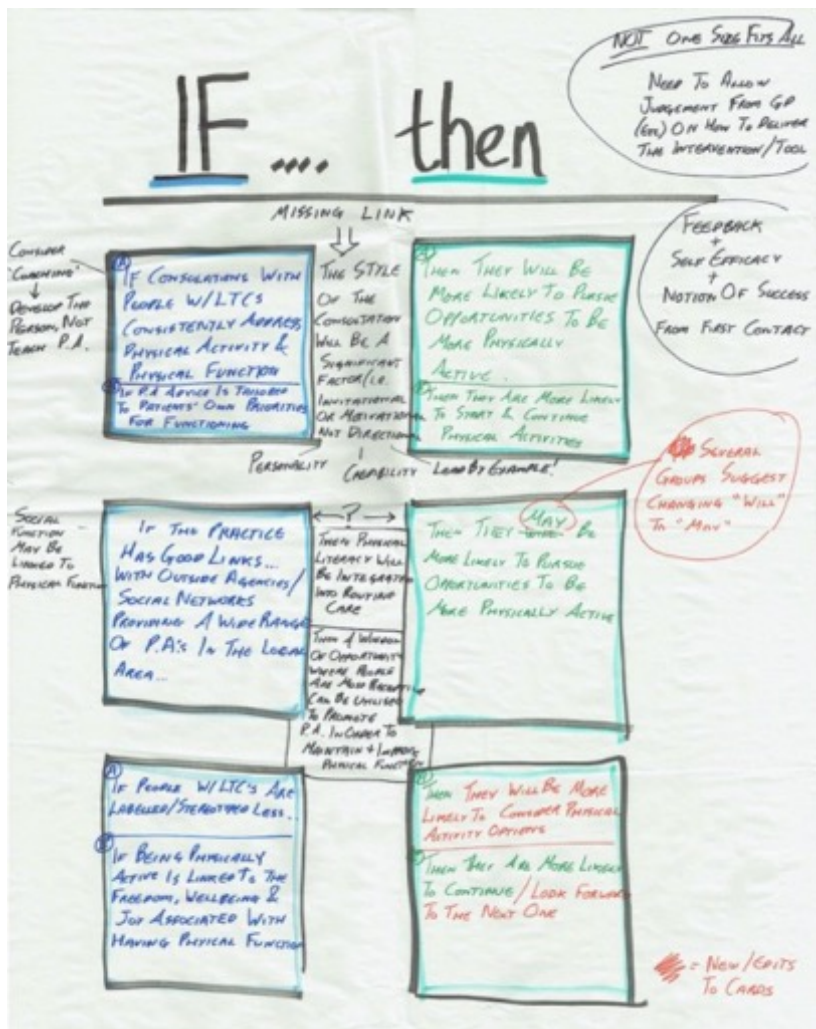


# process storyboards





# process storyboards



	<b>Annie</b> Age: 66	Living / Family situation Lives with - working
	Hometown Merrill Bridge	
About me Volunteer at work's (now) mental health centre Cuts	Hobbies -gardening Reading	
Finance situation low on - good pension, school primary school teacher	My long term condition is... Rheumatoid Arthritis	
Things that are important to me Cuts Mental health Being honest & helping people	Things that are challenging are Dementia, Pain, using keeping motivation / active	
I find it difficult to... (due, not due) Getting going in the morning Maintaining her home / garden Keeping garden	Attitude to technology None - this makes (Annie say) the house dark	

**Who are you?**

Your position:  Age:   
 Your ethnicity:

Describe yourself in a few words (What do you do and what do you like to do? What are your goals? What do you want to do in the future?)

In your experience, what has worked best so far about the...  
 Context is:  Mechanism is:  Outcome is:

In your experience, the biggest challenge about the...  
 Context is:  Mechanism is:  Outcome is:

**CONTENT**

Family & life context	Level of thinking about body function - focus on what works rather than what isn't	Type of long term condition or level of participation in choice about a how much control that the condition is possible
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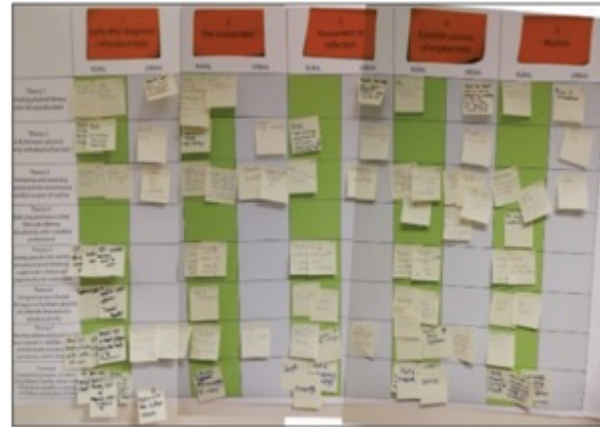
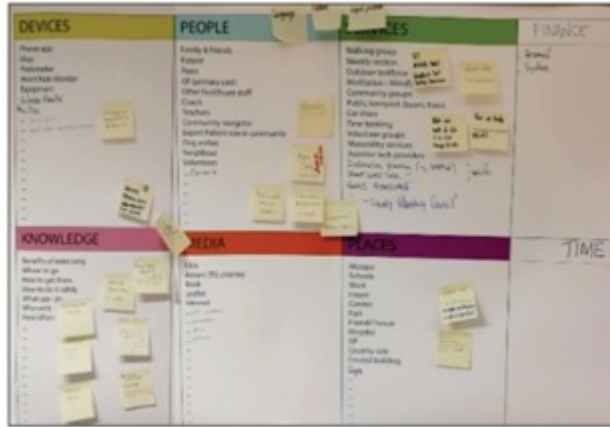
**METHODS**

Being in the right mindset to change	Working with what feels like a huge task (or change) can make / use manageable parts	Continuity of care & the ability to build a trusting relationship with the health professional in a long-term
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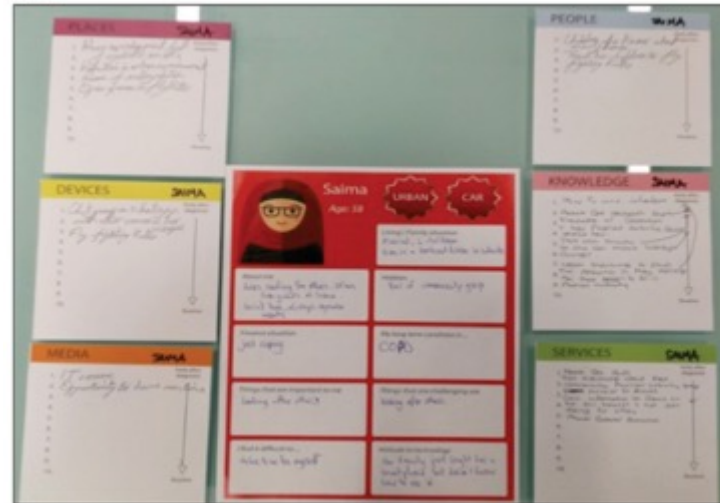
**OUTCOMES**

Building personal trust in staff in the home of the family	Integrating a study of activities into routine of everyday life	Maintaining independence
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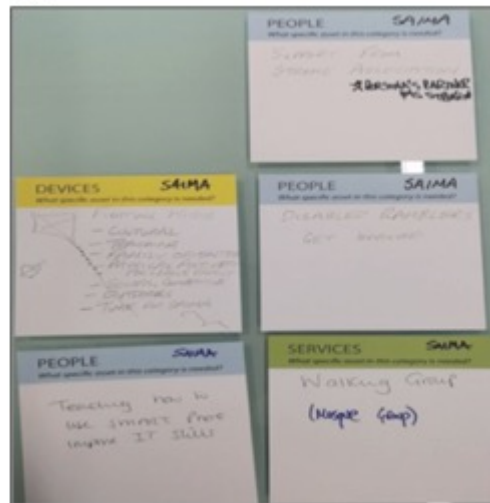
# process storyboards



c

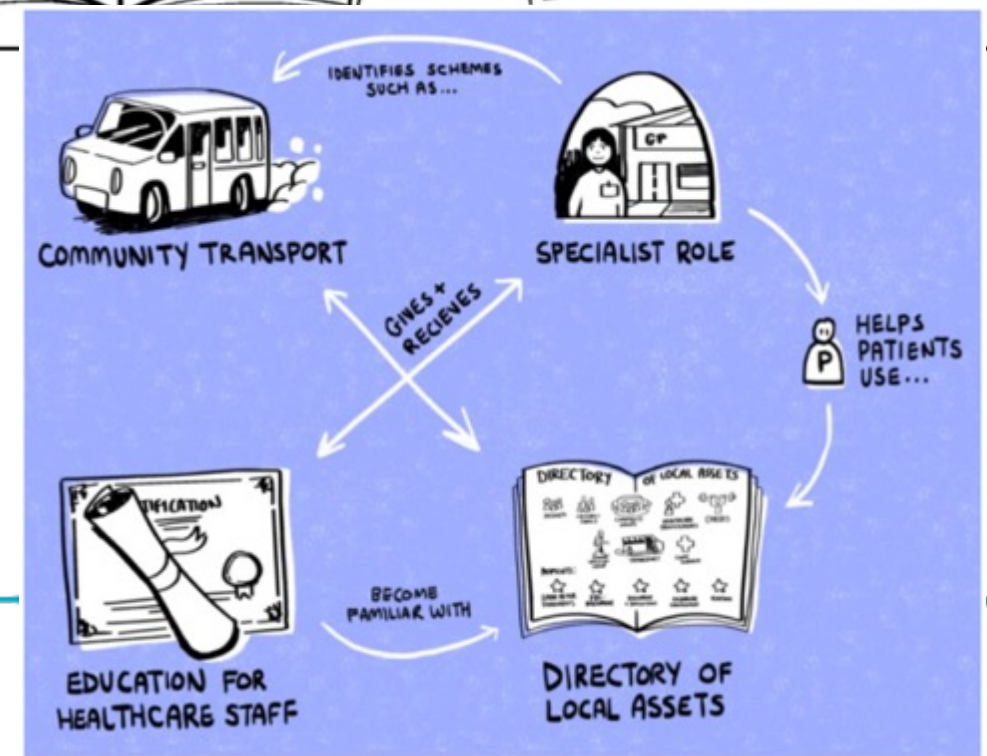
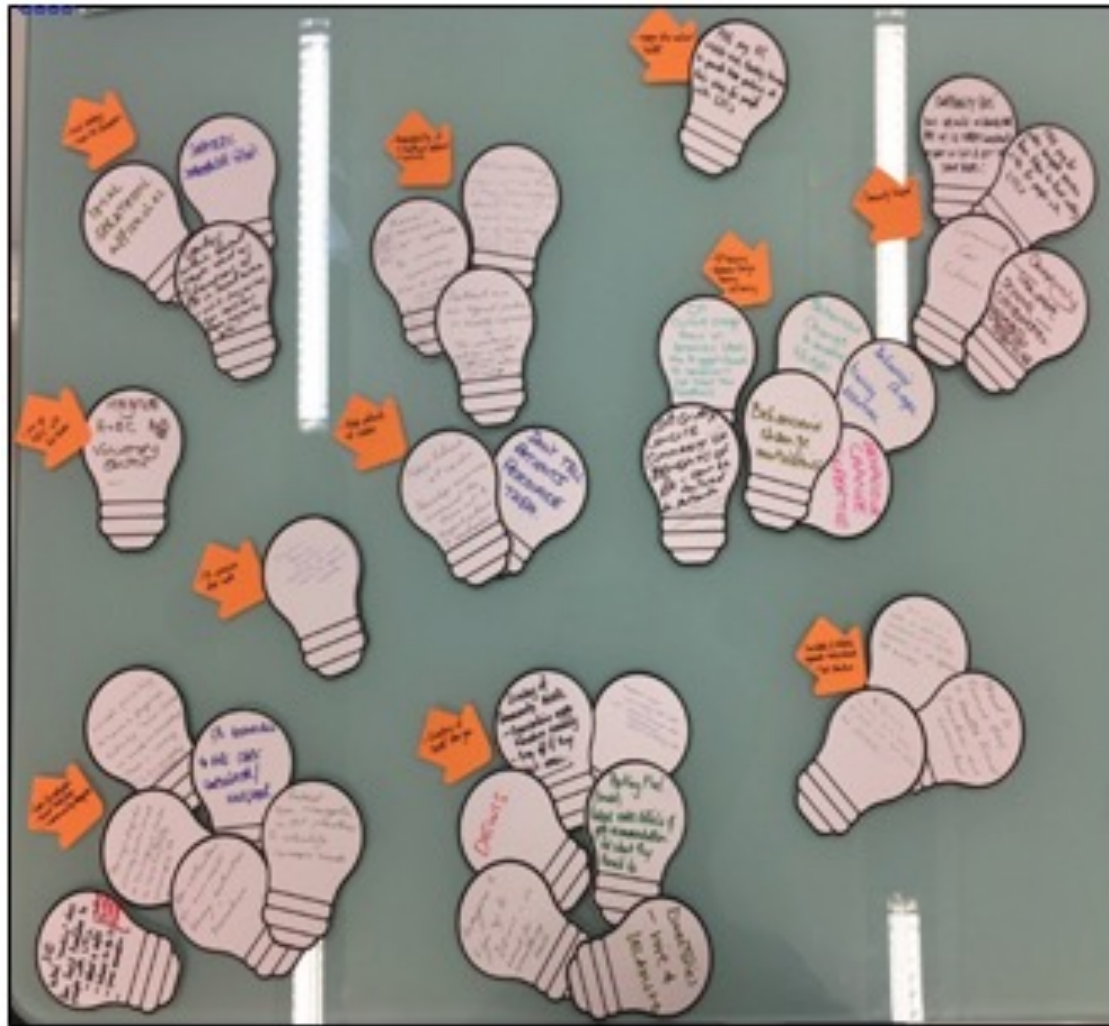


d





# process storyboards



# the intervention

## $f$ (Context, Mechanism) = Outcome

**CMO 1** changing practice culture through alignment

**(C)** primary care settings are characterised by competing demands, and improving physical activity and physical function is often not prioritised in a busy practice

**(M)** however, if the practice team culture can be aligned to promote and support the elements of physical literacy, then

**(O)** physical activity promotion will become more routine and embedded in usual care.

**CMO 2** providing resources

**(C)** physical activity promotion in primary care is inconsistent and uncoordinated

**(M)** if specific resources are allocated to physical activity promotion (in combination with a practice culture which is supportive), then

**(O)** this will improve opportunities to change behaviour.



# the intervention

## CMO 3 Individual advice

**(C)** people with long-term conditions have varying levels of physical function and physical activity, different attitudes to physical activity and varying access to varying types and amount of local resources that enable physical activity

**(M)** if physical activity promotion is adapted to individual needs, priorities and preferences, and considers local resource availability, then

**(O)** this will facilitate a sustained improvement in physical activity

## CMO 4 improving capability of practice workforce

**(C)** many primary care practice staff have a lack of knowledge and confidence to promote physical activity

**(M)** if staff develop an improved sense of capability through education and training, then

**(O)** they will increase their engagement in physical activity promotion

## CMO 5 programme credibility

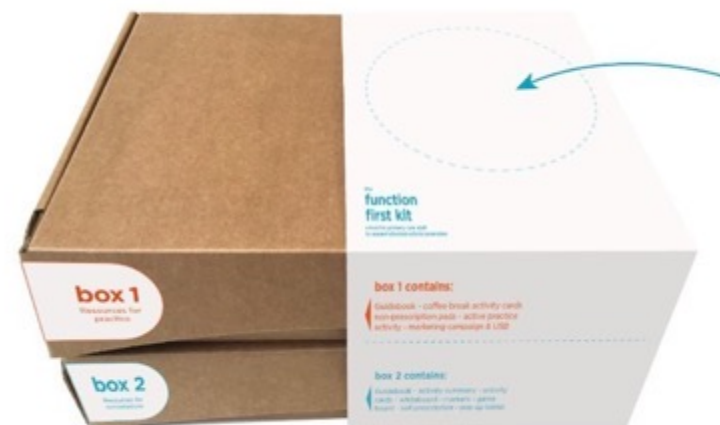
**(C)** if a programme is credible

**(M)** then trust and confidence in the programme will develop and

**(O)** more patients and professionals engage with the programme

# the intervention: relating features to the CMOs

resources need to be in synergy with other initiatives **CMO 2**



Your logo goes here

The kit of resources we designed can be branded in keeping with any existing physical activity scheme, as in the example above where it carries the branding of Move More, a Sheffield based scheme to get the city moving.

*'Move More' logo reproduced with the permission of Sheffield Hallam University on behalf of the National Centre for Sport and Exercise Medicine in Sheffield.*

## box 1: resources for practice

Phase 1: opening the box:



Follow a link to interactive animations to incentivise further interaction and demonstrate the value of physical activity.

adds credibility by demonstrating value **CMO 5**

Phase 2: top layer materials:



Function First Guidebook



Conversation Cards



Case Study Cards



"Why Don't You?"

individual advice that considers context **CMO 3**

capability of practice workforce **CMO 4**

Phase 3: bottom layer materials:



Non-prescription pads



'Active Practice' poster



Marketing campaign with digital files

improve practice culture **CMO 1**

provision of resources **CMO 2**

## box 2: resources for one-to-one/group consultations

Phase 1: opening the box:



Phase 2: top layer materials



Facilitation Guidebook



Activity summary flip pad for display on tables

adapt to include social support **CMO 3**

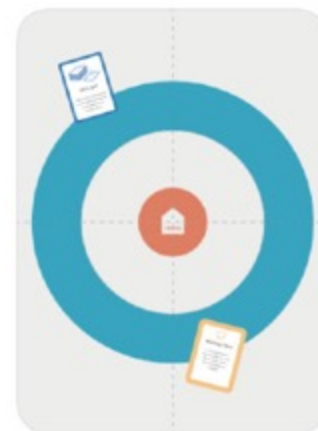
Phase 3: bottom layer materials



Guided card game



Wipe-clean whiteboard & markers



Multipurpose game board



Self-prescription



Pop-up box, part of the card game activity

provision of resources **CMO 2**

# the intervention

## box 1: resources for practice



Phase 3: bottom layer materials:



Non-prescription pads



'Active Practice' poster



Marketing campaign with digital files

*improve practice culture* **CMO 1**

*provision of resources* **CMO 2**



# the intervention

## box 2: resources for one-to-one/group consultations



### Turn-taking

Everyone can understand the format and participate. Time is protected during your turn.



### Colour

colour coding can separate subject areas.



### Focus

The ability to focus on, reflect on and consider a specific subject.



### Comparison

The ability to compare and contrast ideas and subjects.



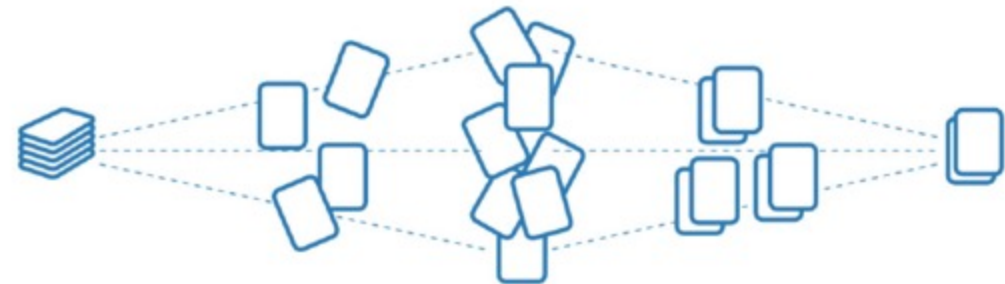
### Relationships

Cards are positional and moveable in 2D space.



### Order

Cards can be prioritised and sequenced.



# the intervention: online resources

A key requirement that emerged from the research and co-design workshops was a directory of community assets. We envisage an account system ensuring that individuals or groups only see the information that is relevant to them.



## patients/ general public

### Directory of local assets

From here users can view a range of activities, groups, events and transport options in their local area.

### Finding best matches

Activities can be filtered based on personal preference, ability, location and other variables. The Physical Activity Advisor can help people navigate the site during consultations.



## GP/surgery staff/ physical activity advisor

### Personalised interactive animations

The online profile could be the space where healthcare staff are directed to see the personalised animations when opening box 1

### Patient goals and activity record

GP staff and Physical Activity Advisor can access simple patient information such as goals and agreed activities during consultations.



## community transport

### Community Transport Description and Contact Information

Each transport scheme can have its own page populated by the team with a brief description of the service, who it is aimed at and a map of the operating area.

### Referenced throughout the directory

If the user has added specific community transport scheme to their favourites, then they can see at a glance if it can take them to the activities on screen.

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- Serious Incident Investigations

(Project ID: 18/10/02 <https://fundingawards.nihr.ac.uk/award/18/10/02>)

## Co-design & Creativity

# Involving Patients and Families in Serious Incident Investigations

**Jane O'Hara**

*Ruth Simms- Ellis, Siobhan McHugh, Lauren Ramsey,  
Joe Langley, Becca Partridge, Chris Redford, Rebecca  
Lawton...and many others!*





**Becca** is a Design Researcher. Her expertise is in the facilitation of creative methods.



**Joe** is a Principal Research Fellow. His expertise is knowledge mobilisation.




**Chris** is a Designer and Illustrator. His expertise is making knowledge accessible to everyone.





**Jane** is a Professor of Healthcare Quality & Safety. Her expertise is in patient safety and she leads this research project.




**Ruth** is the PFI-SII Programme Manager. Her expertise is in psychological trauma, mental health and wellbeing.



**Siobhan** is a Research Fellow. Her expertise is involving patients, families and staff in health service improvement and patient safety.



**Lauren** is a Research Fellow. Her expertise is in exploring different perspectives of patient and family involvement in patient safety.



# What are we aiming to achieve?

To *develop* and *test* new processes and guidance to support the better *involvement of patients and families in serious incident investigations*:

Mental health hospitals  
Acute hospitals  
National investigations (HSIB)

Funded by NIHR Health Services & Delivery Research  
£894K  
October 19 – December 22

# Rationale

Estimated  
10,000 report  
serious incidents  
each year

Conduct,  
approach, and  
impact of  
investigations  
is variable

Enormous &  
ever increasing  
cost of  
litigation

Reasons for pursuit of  
claims are complex &  
unclear but simply  
getting answers is one

'Organisational  
learning' is a key  
*stated* aim of  
investigations

Patients and  
families are not  
routinely  
involved in  
investigations

Missing a key  
perspective in  
understanding  
what went  
wrong

If we can involve  
patients and families,  
can we improve  
learning?

What impact might  
this have on claims?  
And on the patients' or  
families sense of  
justice or healing?

# Process

## Research

Looked at policies  
for investigating  
incidents  
Reviewed Studies  
exploring experiences  
of patients & families  
Spoke to patients,  
families, investigators  
& staff

## Synthesis

Draft common  
principals  
Restorative  
Learning Approach

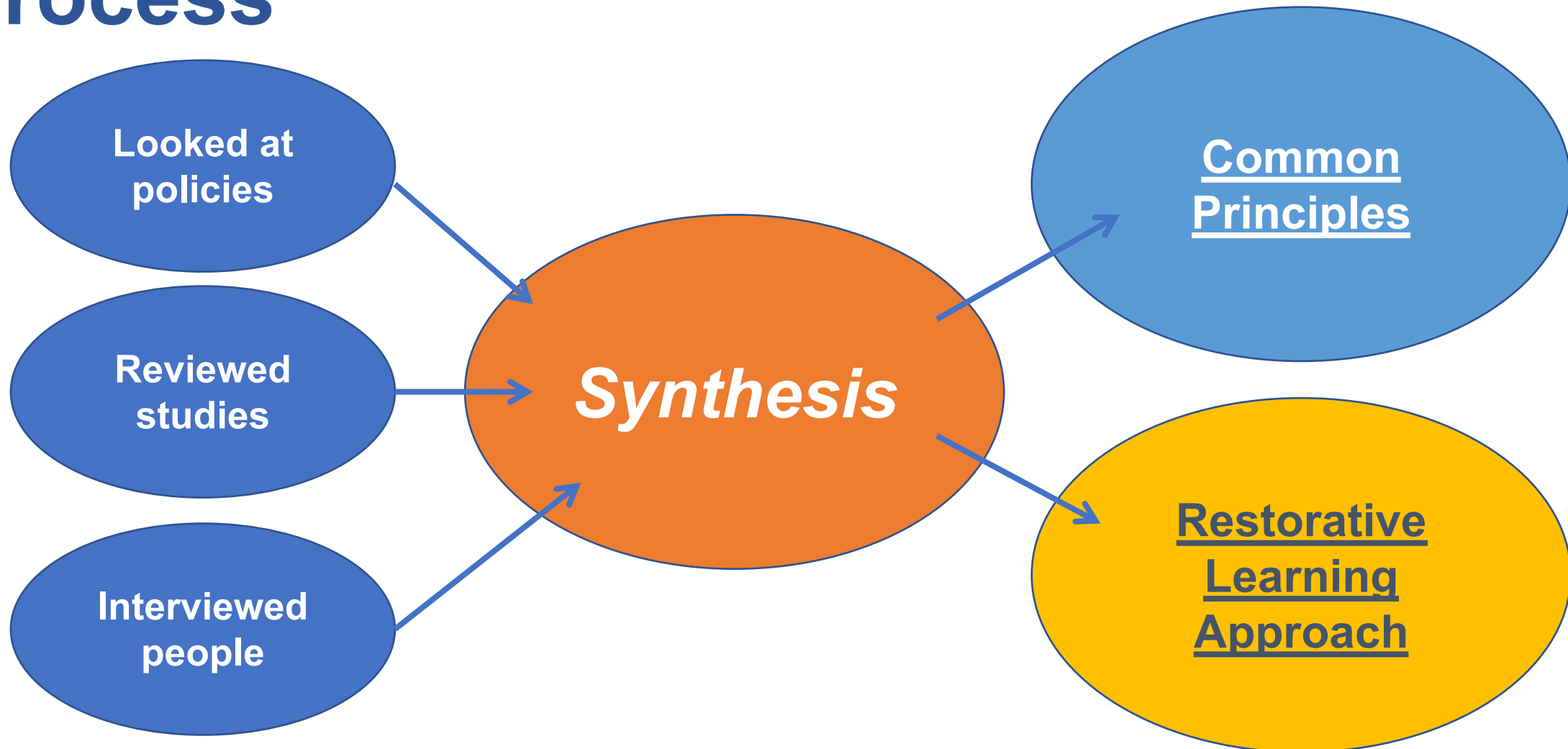
## Codesign

Resources & tools  
for all stakeholders  
to support  
involvement of  
patients and families  
in the investigations

## Evaluation


Ethnographic  
study, 1 year, 3  
contexts (acute, MH,  
national) 25  
investigations in real  
time.

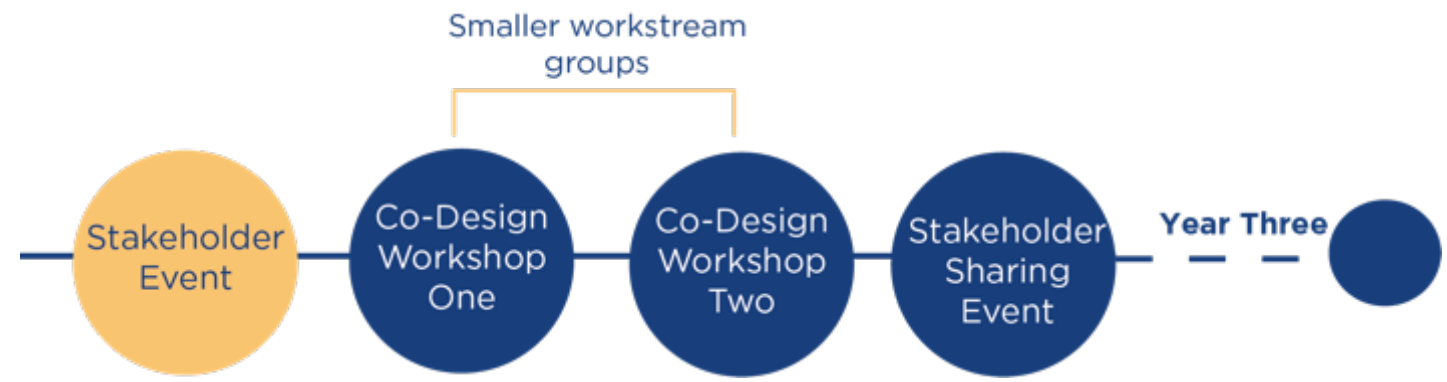
# Process



# Co-Design (PRE-COVID ORIGINAL PLAN)

Codesign workshops in 3 streams:

-  Mental Health settings
-  Acute settings
-  National investigations

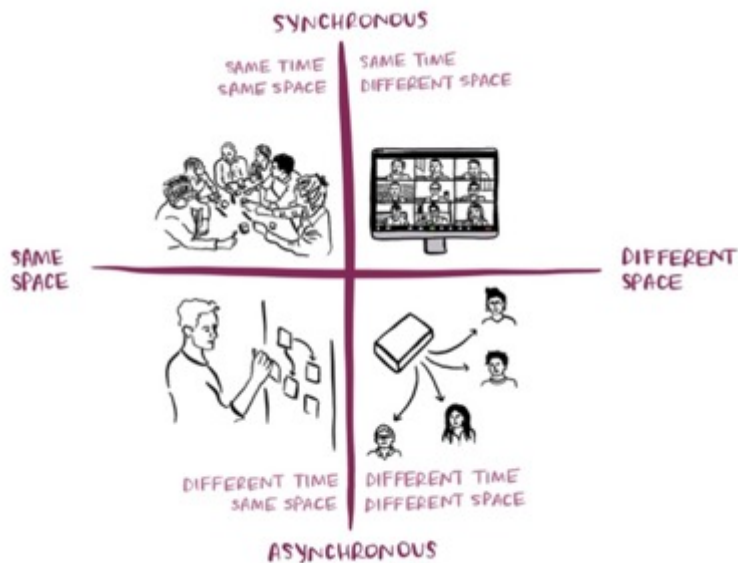


Originally  
scheduled  
for Nov  
2020

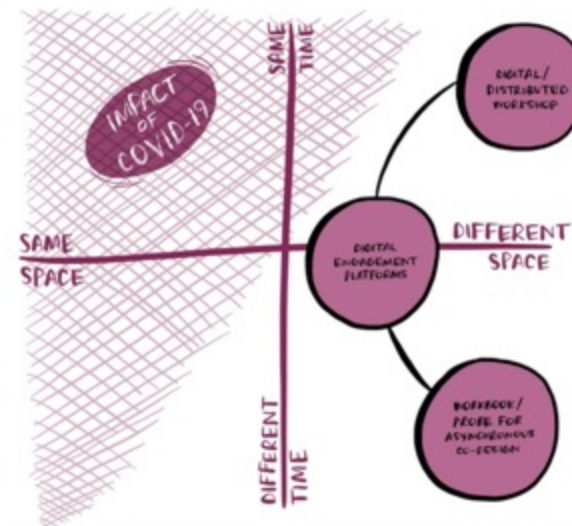


# Co-Design (COVID ADAPTION – delayed to Apr 2021)

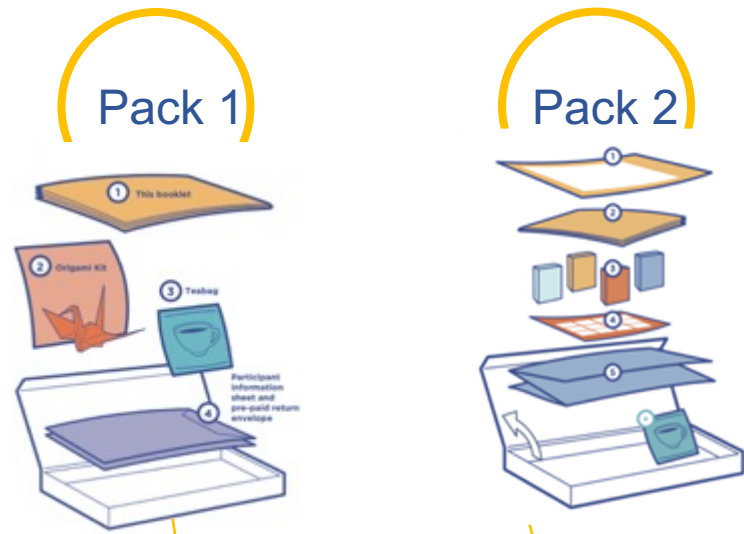
- Remote or 'low contact' co-design was still new & emergent
- Presented opportunities as well as challenges



BLENDED ASSEMBLAGES OF CO-DESIGN PROCESSES



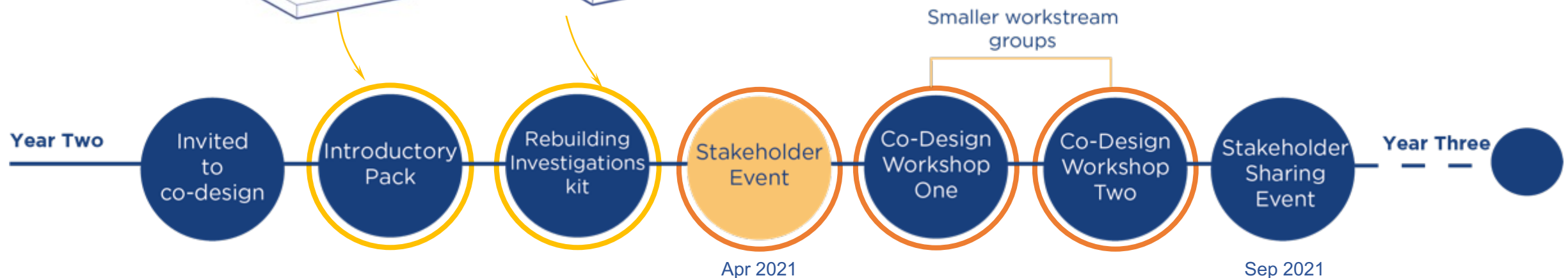
# Co-Design (COVID ADAPTION)



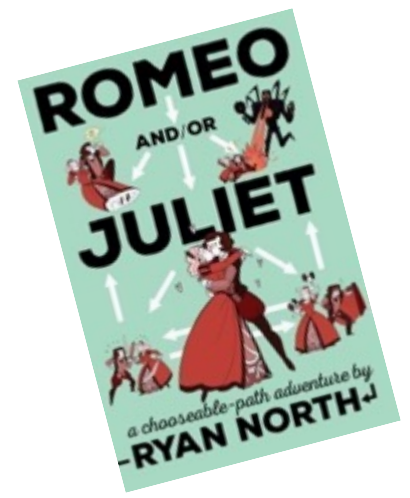
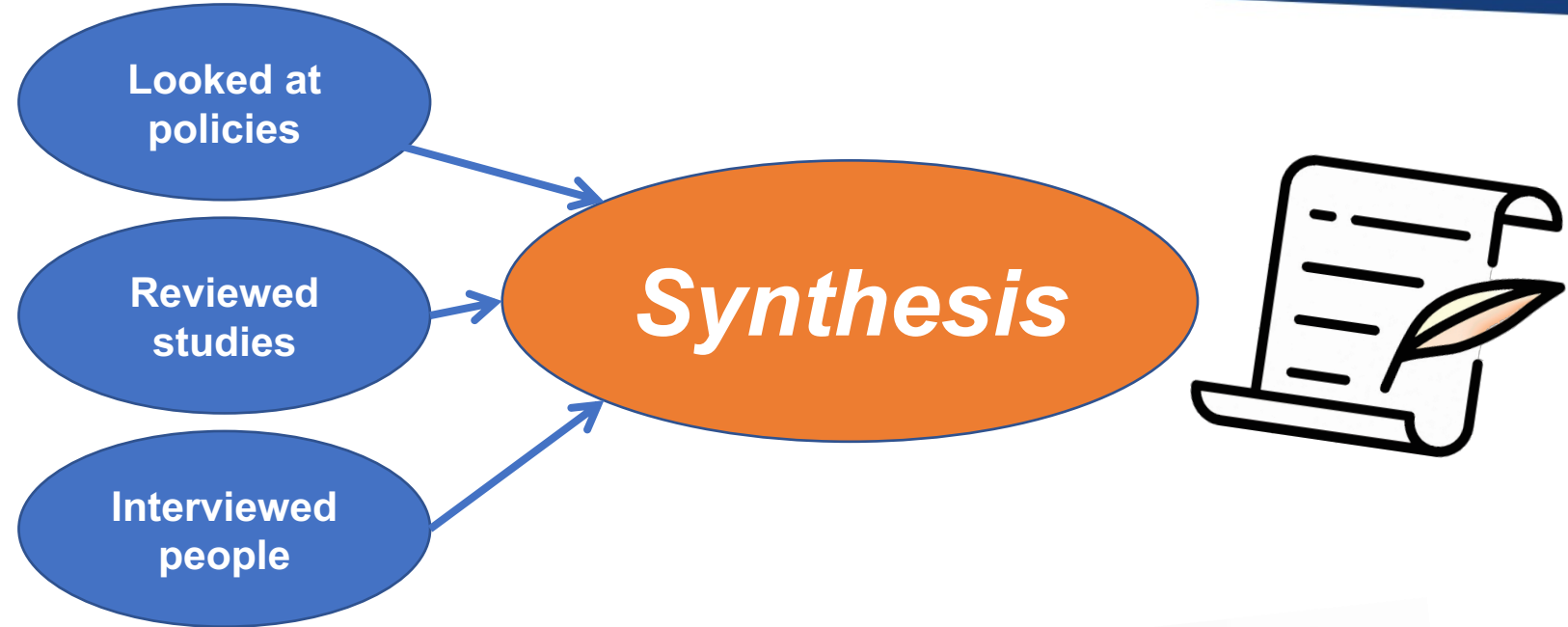
Iterations of **Individual** activity or reflection and **Group** design work.

The **Individual** elements give space & time for you to consider & process things

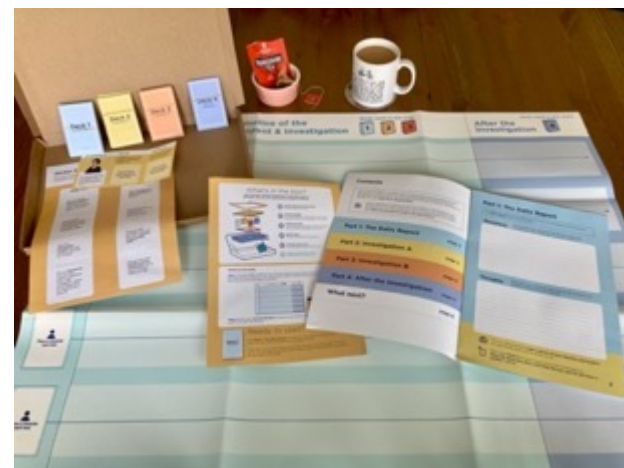
The **Group** elements give time for sharing & developing ideas



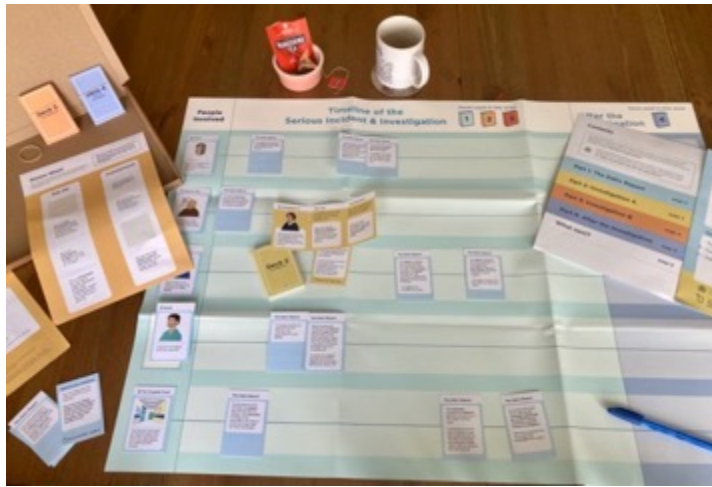




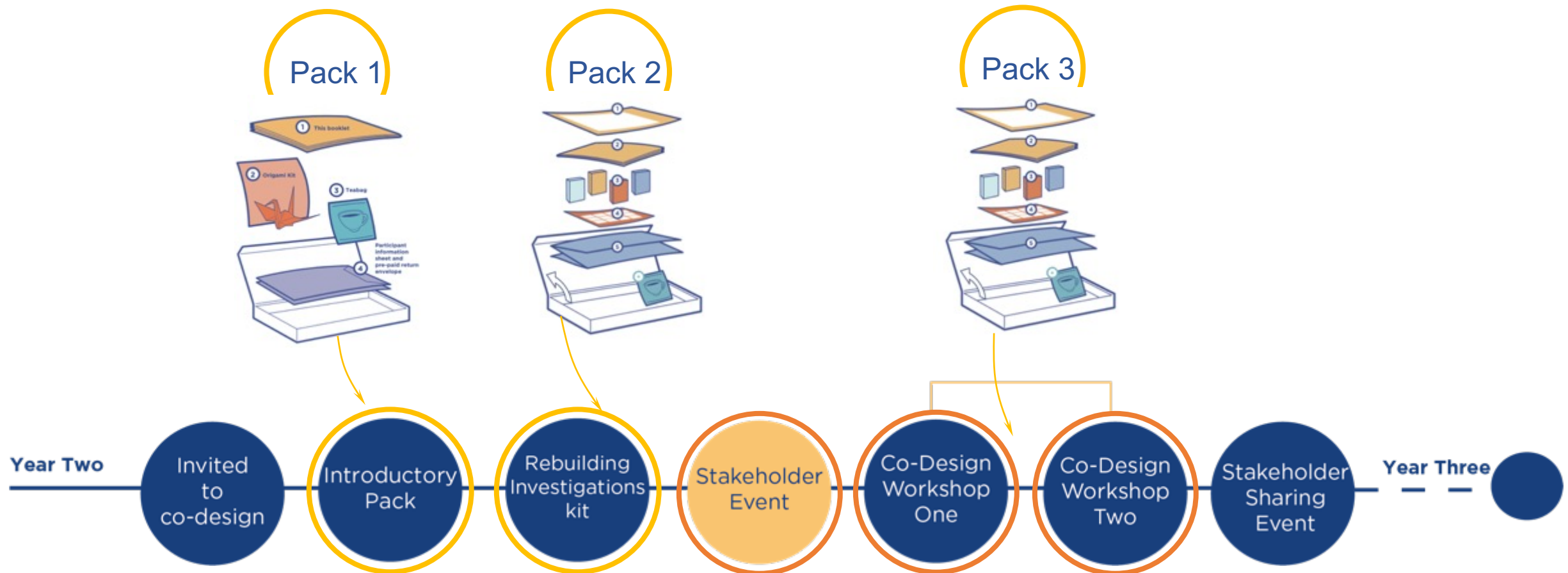
'Story-telling games' and 'Business Origami'







# Low contact co-design



## The case for methodological innovation

### Developing Complex Interventions - Case Studies:

- Function First

(Project ID: 17/45/22 <https://fundingawards.nihr.ac.uk/award/17/45/22>)

- Serious Incident Investigations

(Project ID: 18/10/02 <https://fundingawards.nihr.ac.uk/award/18/10/02>)

## Co-design & Creativity

# Codesign & Creativity

## **The Imperative:**

*... moral & democratic*

- *tax payers money*
- *'nothing about me without me'*

## **The Benefits:**

*... technocratic:*

- *more relevant research; asking the right questions*
- *better research; scrutiny by people not normalised to the system*
- *more usable / implementable research; diversity of knowledge supports evidence that can be used in practice, in context*
- *leverage the full experiential expertise of people who will deliver, use or benefit from the intervention*



# Codesign & Creativity

CONTEXTUAL  
EVIDENCE

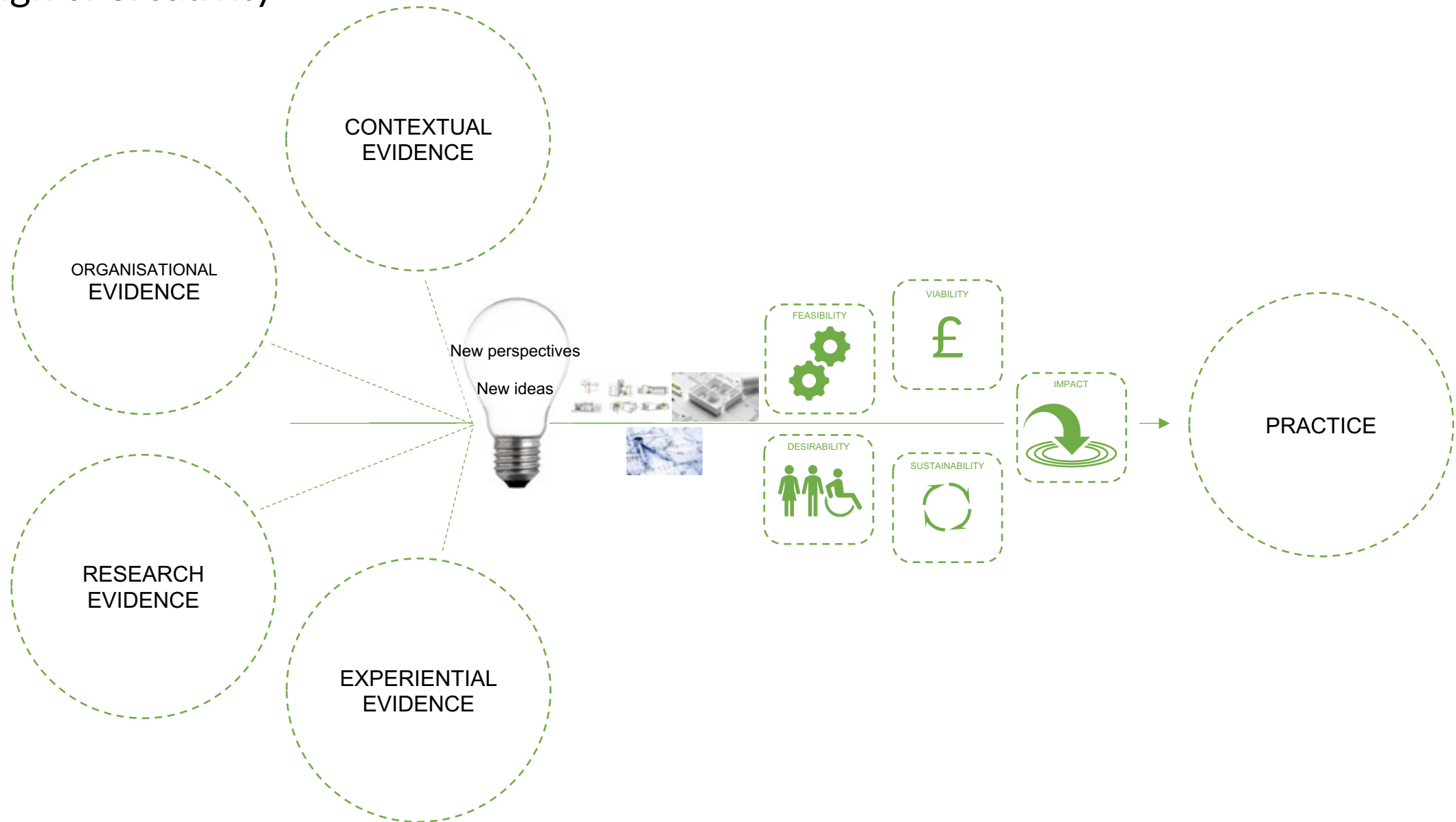
**Creativity** is the generation of ideas; whether that's going to be put to a purpose or it's pure art.

**Innovation** is the introduction of change. The introduction of the new; to innovate. And design is what links them.

**Design** is what takes creativity; an idea; an opportunity; a spark; and turns it into a product; a service; a building.

EXPERIENTIAL  
EVIDENCE

# Codesign & Creativity



# Codesign & Creativity

System reviews  
& meta-analyses

RCT's

Cohort studies

Case-control studies

Cross-sectional studies, survey's

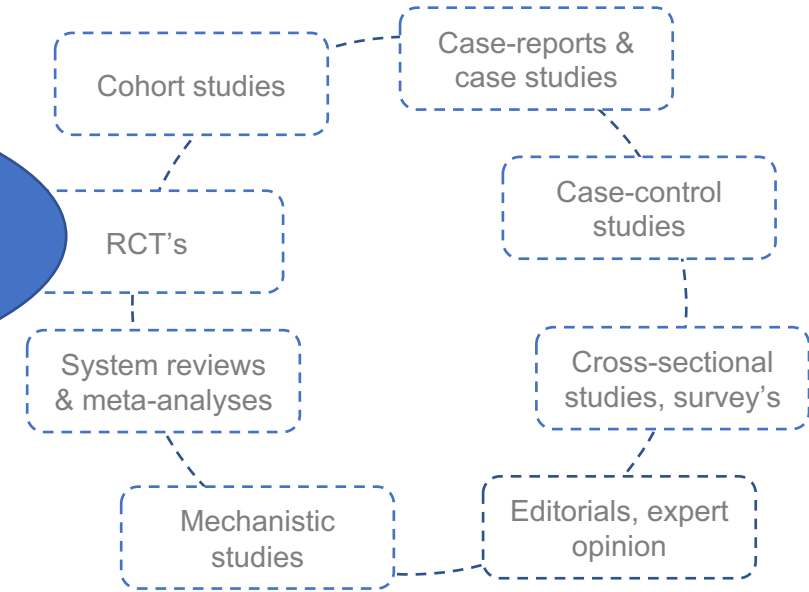
Case-reports & case studies

Mechanistic studies

Editorials, expert opinion

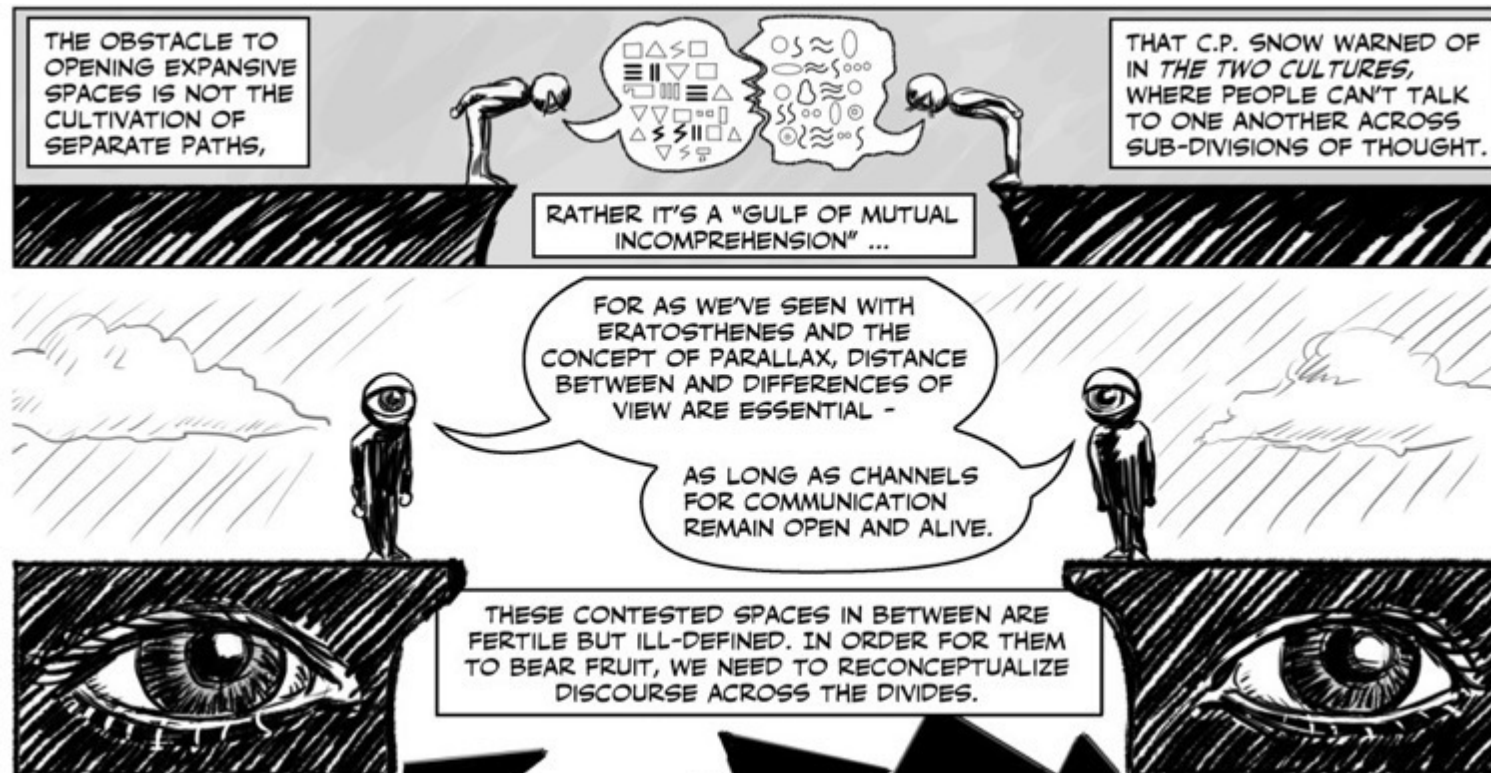
If all forms of evidence are necessary to give us a rich knowledge picture of what works, for whom and in what contexts...  
**then there is no hierarchy**

Worse – framing such things as a hierarchy, becomes a barrier itself



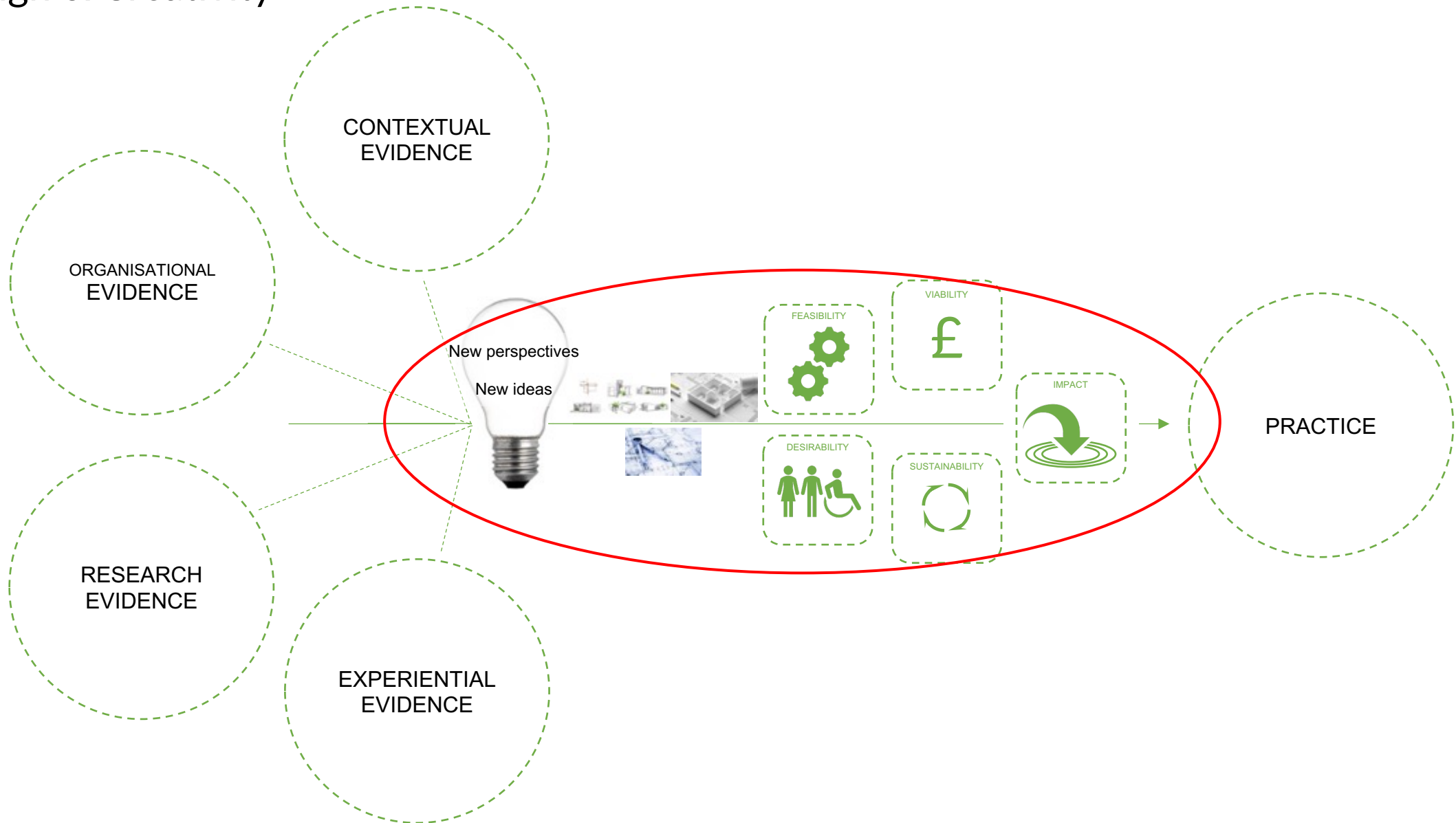
# Codesign & Creativity

A challenge for research in general, is that it accepts and works *with* other forms of knowledge and knowing. Not trying to copy them, or extract the bits perceived as valuable whilst discarding the rest.

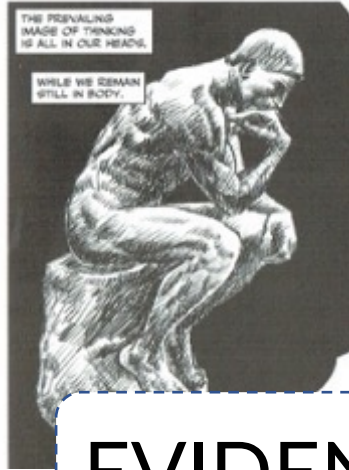


*(This cannot come from a hierarchical frame. All have equal value to making positive change)*

# Codesign & Creativity



# Codesign & Creativity



EVIDENCE

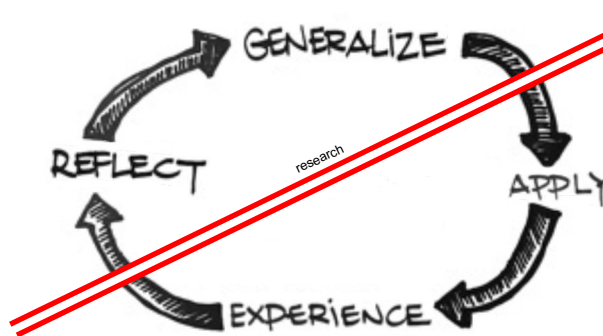
knowledge

knowing

PRACTICE

ABSTRACTION

EXPERIENCE

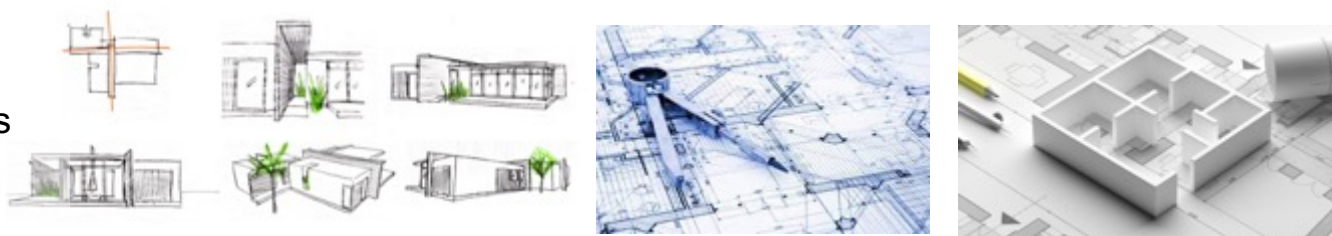
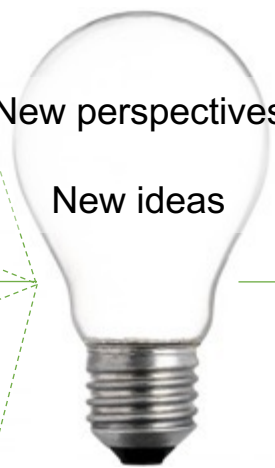




# Codesign & Creativity

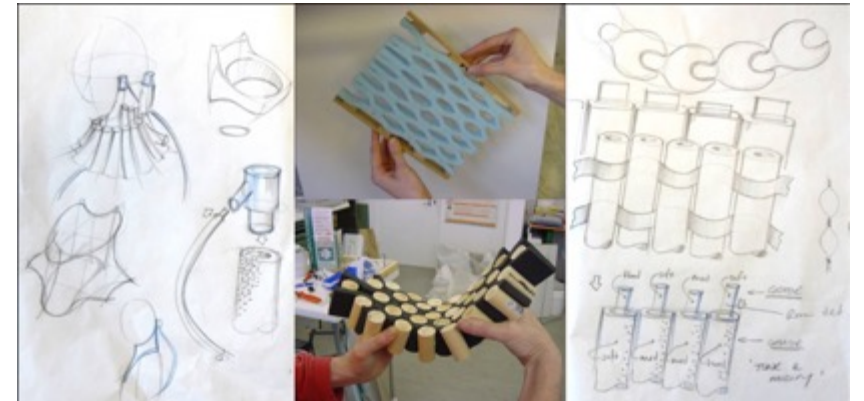
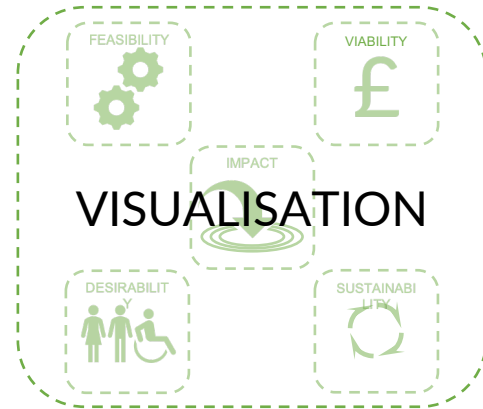
New perspectives

New ideas



# Codesign & Creativity

“... seeing in relation ...”



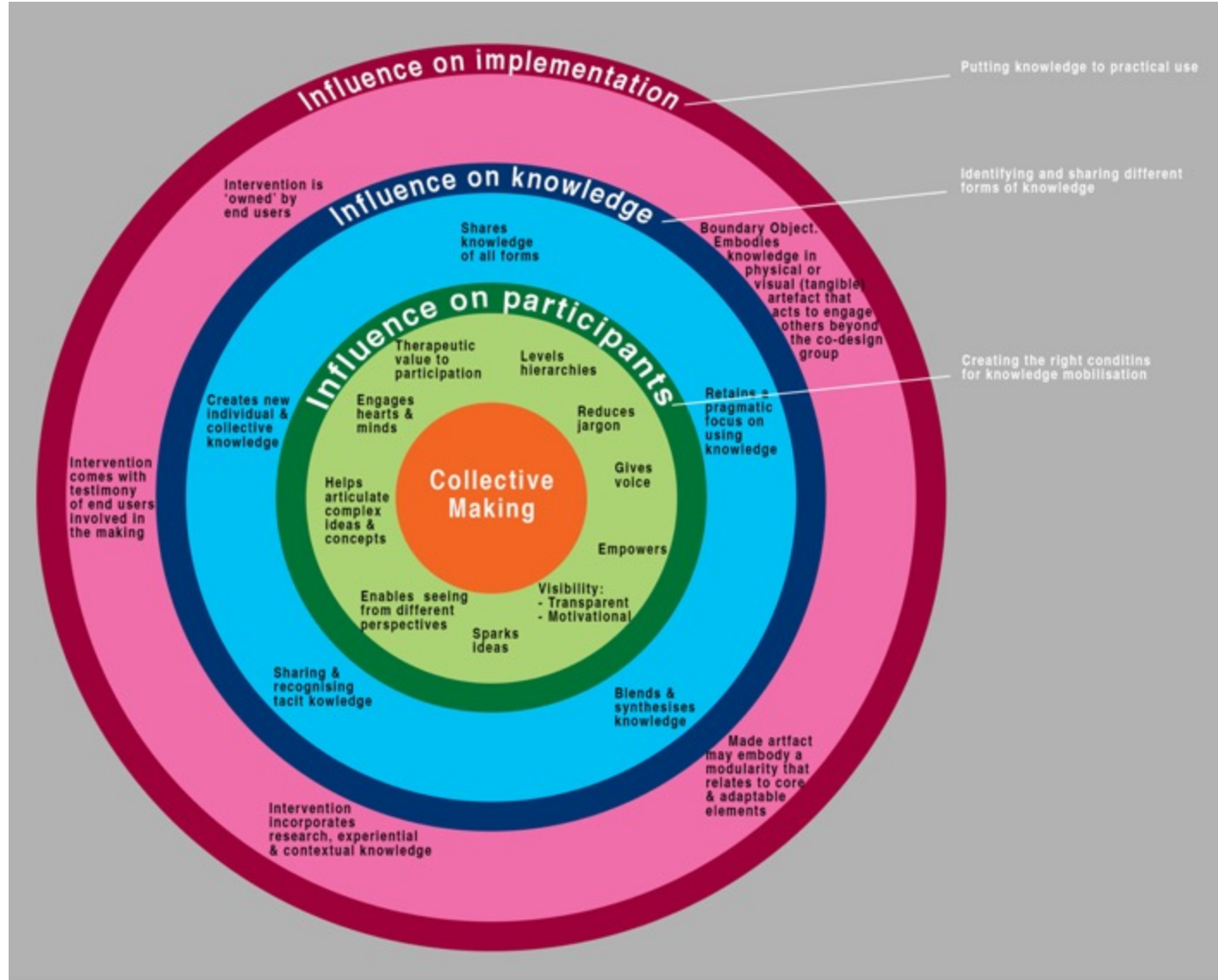


# Codesign & Creativity



1. **Telling Stories**
2. **Complexity: highlighting, exploring, describing, sense making,**
3. **Self-expression: diversity & inclusion, communication, language**
4. **Customisation: relevance, participation & adoption**
5. **Sense making; individual & collective, shared understanding, meaning-making**
6. **New perspectives; seeing things differently**
7. **Community engaging & building, empathy**
8. **Reflection**
9. **Action & Activation & Activism, Media Engagement**

# Codesign & Creativity



1. **Sharing power**
2. **Including all perspectives**
3. **Respecting and valuing the research co-production partners**
4. **Reciprocity**
5. **Building Relationships**

# Codesign & Creativity

## 1. Sharing power

*"... the process is jointly owned and people work together to achieve a joint understanding..."*

## 2. Including all perspectives

*"... make sure the team includes all those who can make a contribution..."*

## 3. Respecting and valuing the research co-production partners

*"... everyone is of equal importance..."*

## 4. Reciprocity

*"... everyone benefits from working together..."*

## 5. Building Relationships

*"... an emphasis on relationships is key to sharing power.*

*There needs to be joint understanding and consensus and clarity over roles and responsibilities.*

*It is also important to value people and unlock their potential..."*

Hickey, G. et al (2018). Guidance on Co-producing a Research Project. Southampton: NIHR INVOLVE.

thank you  
any questions?

# Codesign & Complex Intervention Development

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**EXCLUSIVE!!!** --- pre-publication notice ... coming soon

Langley, J., Knowles, S. & Ward, V. (2021) "Conducting a research co-production project; a principle based approach" Ch In: Graham, I., Rycroft-Malone, J., Kothari, A. & McCutcheon, C. (ed.) *Research Co-production in Health and Social Care*, Wiley

Evidence & Policy Special Issue – {working title "Creativity & Coproduction"}

**Joe Langley**

(PhD, MEng)

**Lab4Living**

@JoeLangley\_

j.Langley@shu.ac.uk