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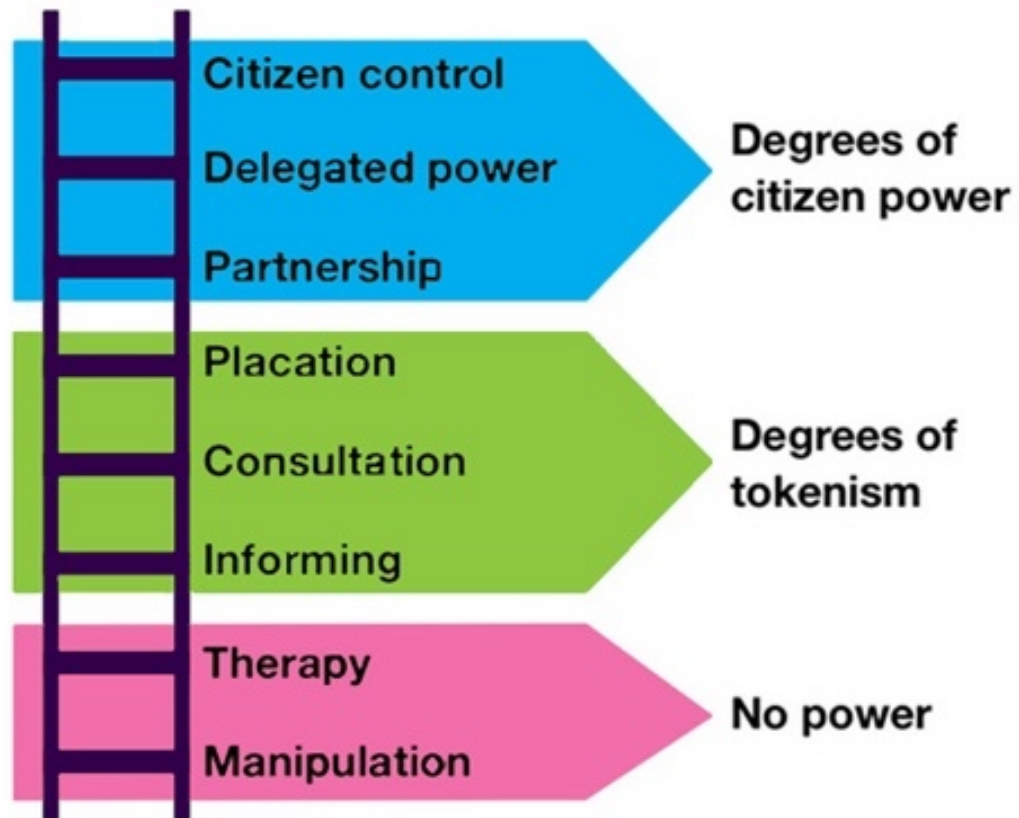
## Co-Design

Prof Paul Chamberlain - Lab4Living Sheffield Hallam University, UK.

Prof Claire Craig

Nick Dulake



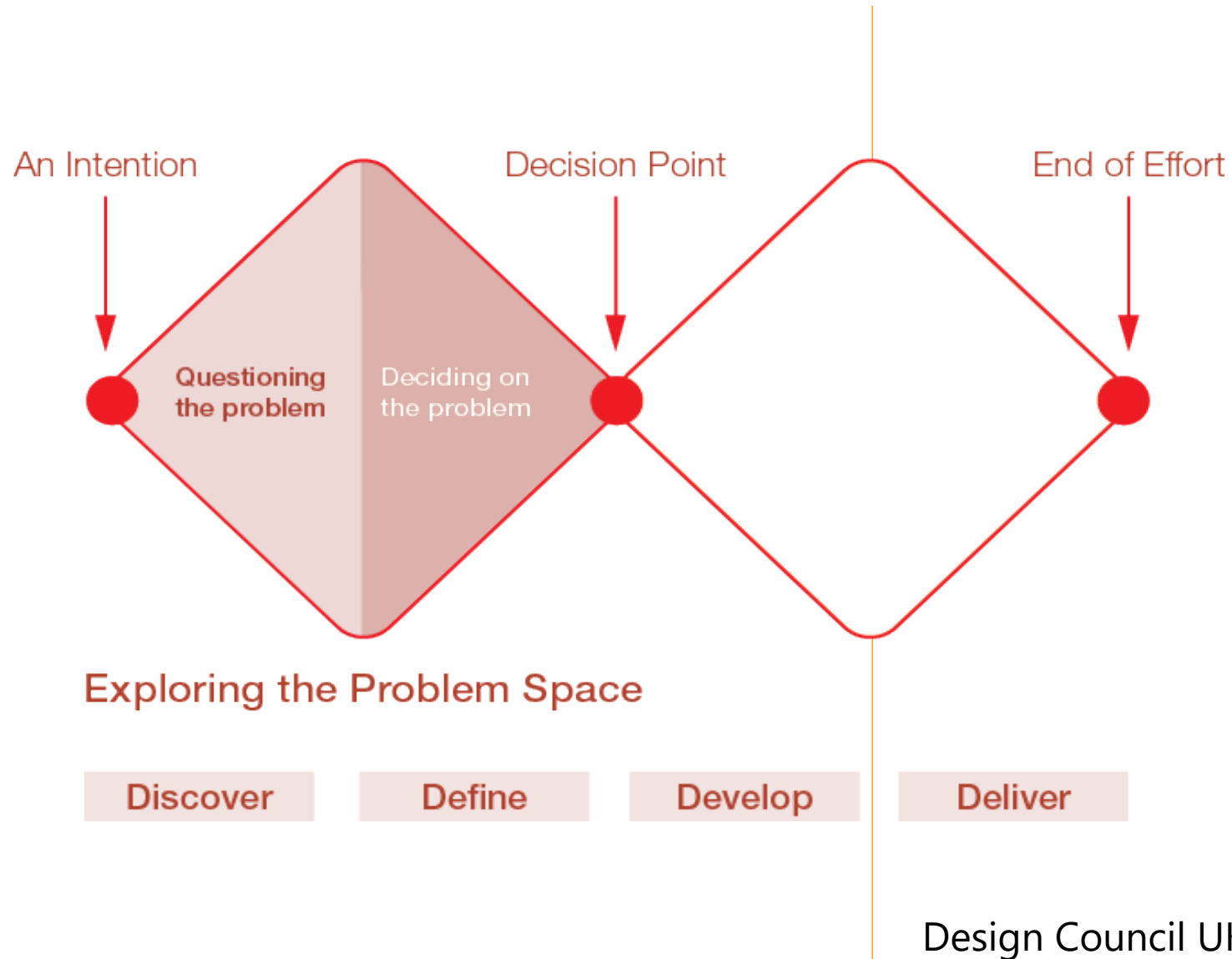


Arnstein's ladder of participation 1969

*The things we use and make (technologies) are not neutral objects but embodiments of ourselves and cultural values. Where a disconnect between the technology and these cultural values emerge this impacts on the individuals relationship with the world.*

Greenhalgh et al (2013)





Design Council UK Double Diamond



NESTORE



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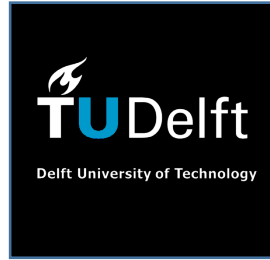
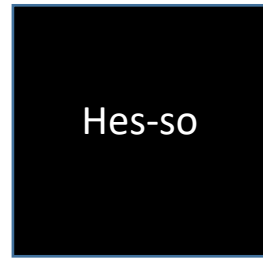


# *Thinking through things*

*'exhibition in a box'*

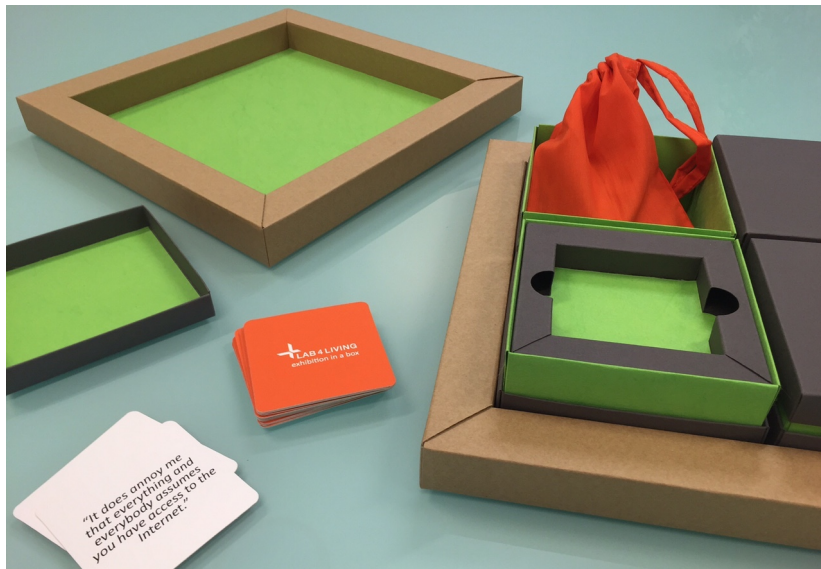
*(Chamberlain & Craig)*





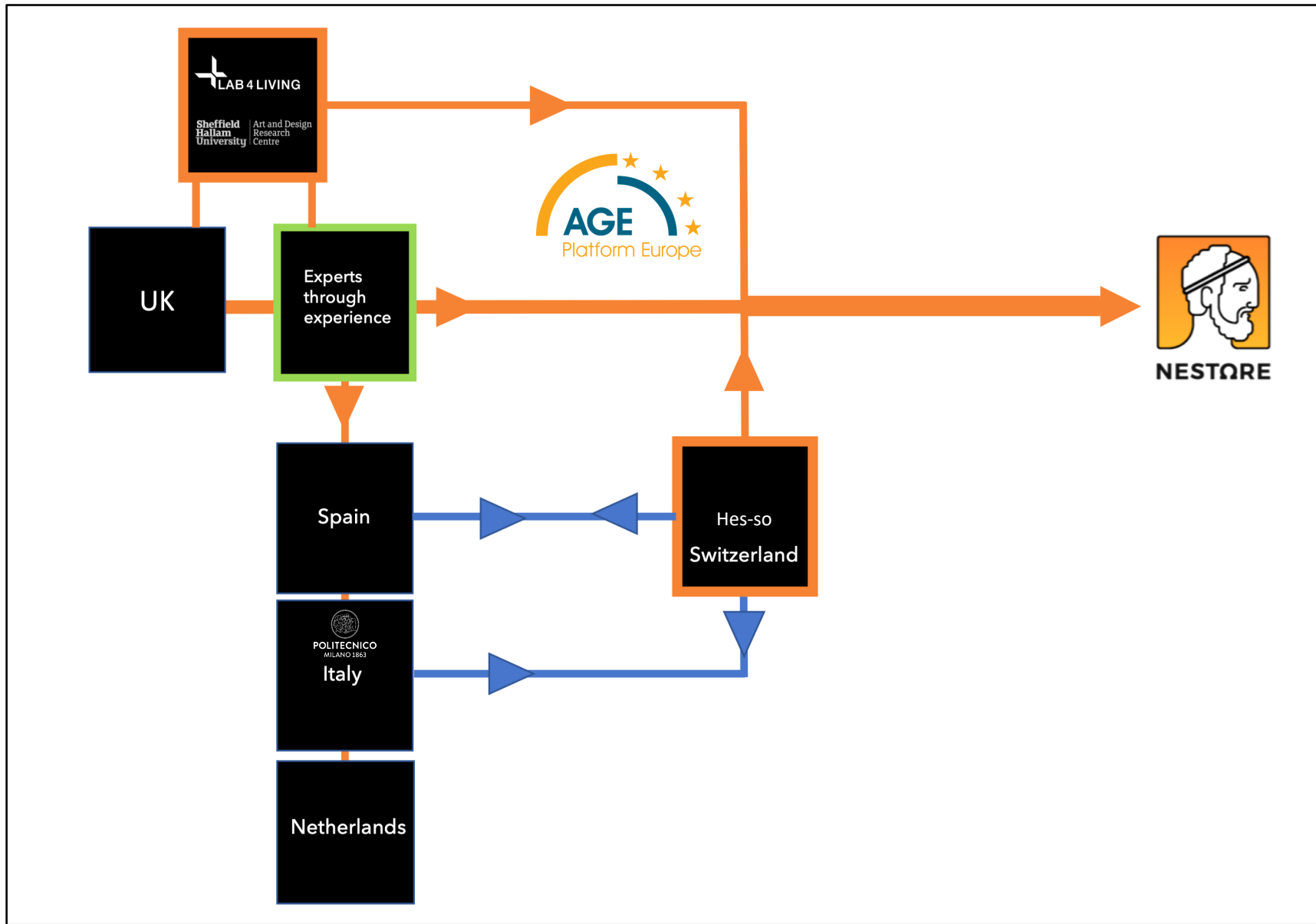
- *'Build understanding of user requirements of the technology: factors that promote and inhibit use*

- *Explore potential contexts of where technologies will be used*



- *Identify priorities regarding the health concerns of this population*

- *Provide an opportunity for refinement of the methodology in preparation for other phases of the research*







*Experts through experience UK*



*Monza, Italy*



*Delft, Netherlands*



*Barcelona , Spain*







I	Want	To get	More active	I am happy to	Go for a walk in the country	Physical Mental Social
I	Would	Benefit from being	Calmer	I would try	A class on meditation	Mental
I	Would like	To obtain	More social connections	It is important	To volunteer	Mental Social
We	Need	Help with	Our balance	I am committed to	Do Nordic walking	Physical Social
I	Don't want	Help with	Workout	But I can	Go dancing	Physical Social
I	Need	To work on	My listening skills	I would try under duress	Fishing	Mental Social

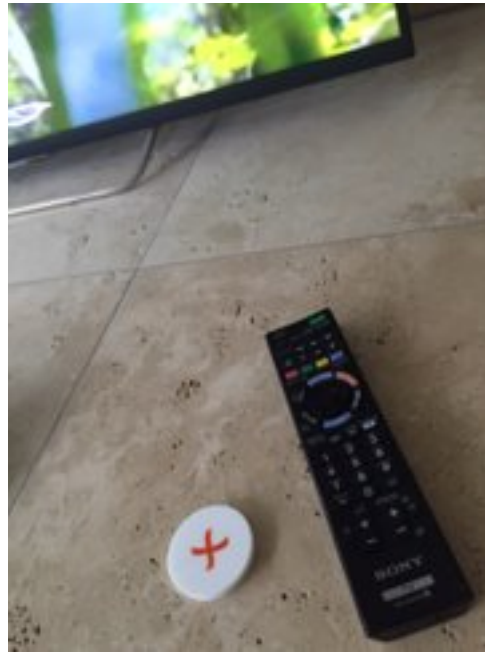


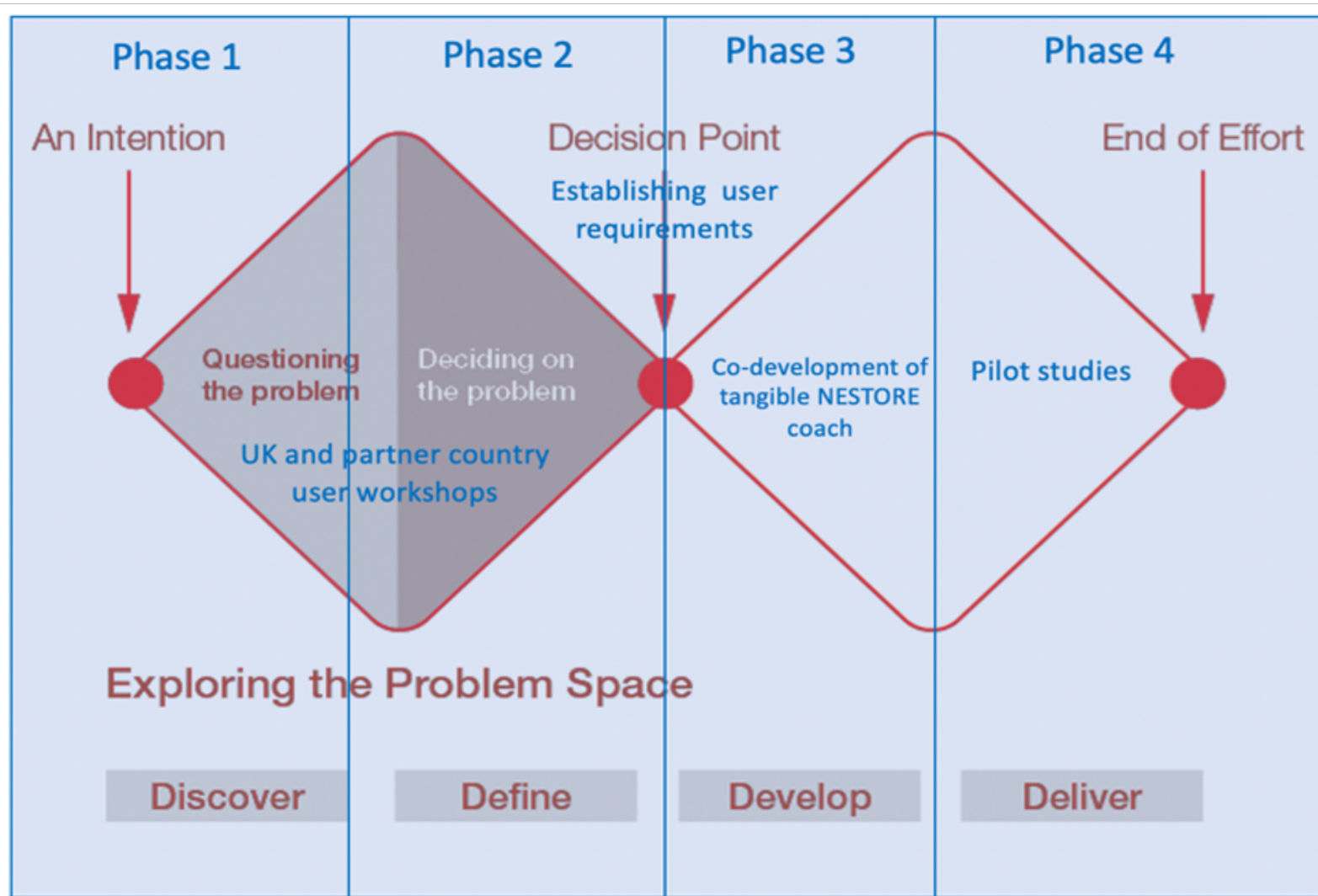
Man	Woman	Single	In couple	Working	Not working	Part Time	I	Need	Want	Desire	Would like to	Don't want
To avoid	Help with	To maintain	To get	Being more active	My memory	My Stamina	Being more social	Losing weight	Putting on weight	Getting knee strength back		
I can	I am happy to	Swim	Run	Ride a bike	Go for a walk	Do some gardening	Go to the gym	Go Dancing	Go fishing	Play Golf	Go see a play	Go for a walk in the country
Physical activity	Nutrition activity	Cognitive activity	Social activity	Pub quiz	Play Cards	Cook a meal for a friend	Join a new class	We				
Pulse counter	Heart rate monitor	Blood pressure monitor	Body temperature	Food Cam								
Weight scales	Nutrition activity	Cognitive activity	Social activity	To find	To finance	Good habits		I can't	I would try	I am committed to		



Experts through experience UK







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## Characteristics and functions potential users considered to be important

Empowerment	Fits my life	Personalisation
Cost	Freedom	Ergonomics
Reliability	Observation	Connectedness
Security	Infrastructure	Being Social
Engaging	Keeping active	



## Characteristics and functions potential users considered to be important

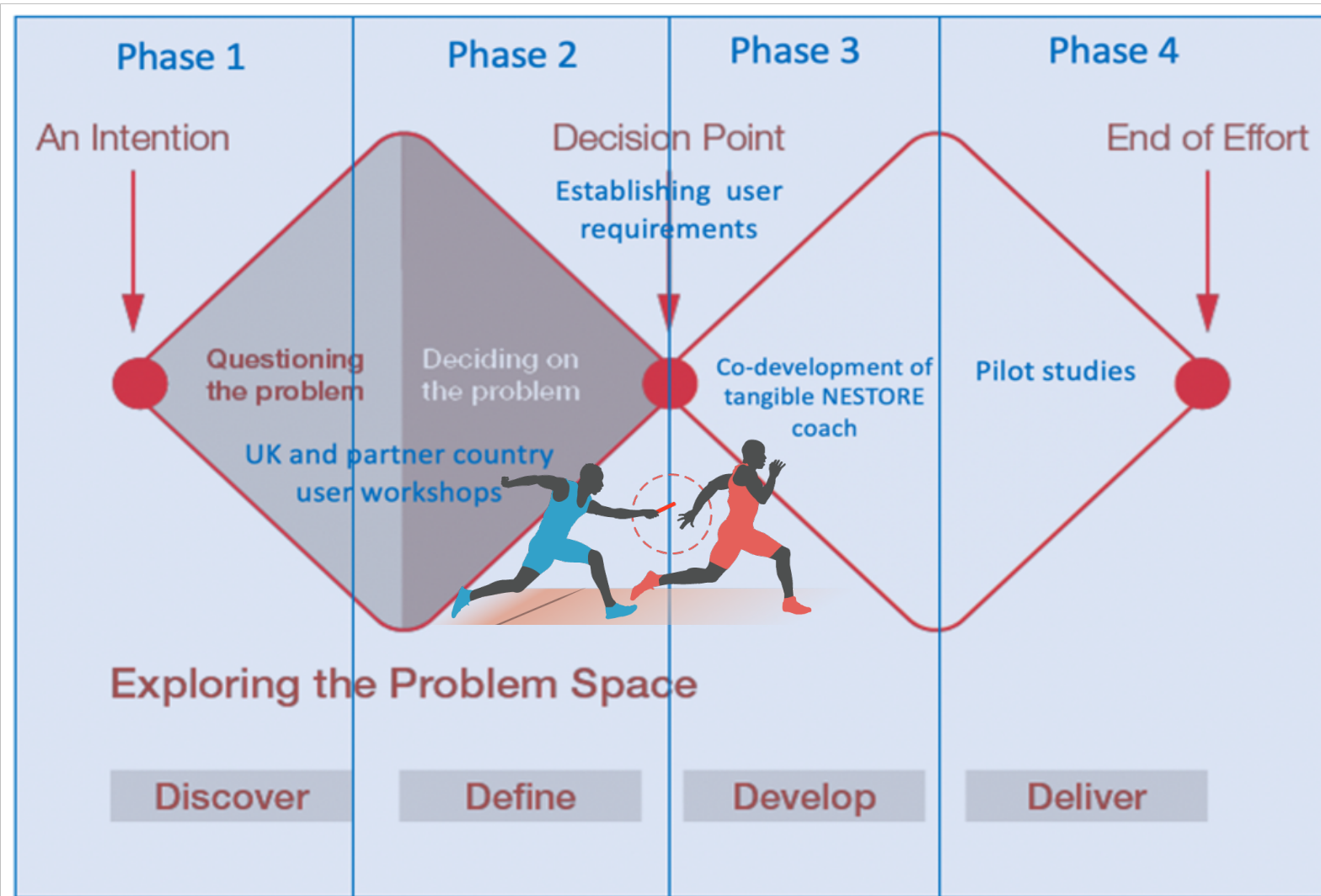
Empowerment	Fits my life	Personalisation
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Reliability	Observation	Connectedness
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- TRUST

- FITS MY LIFE

- COST





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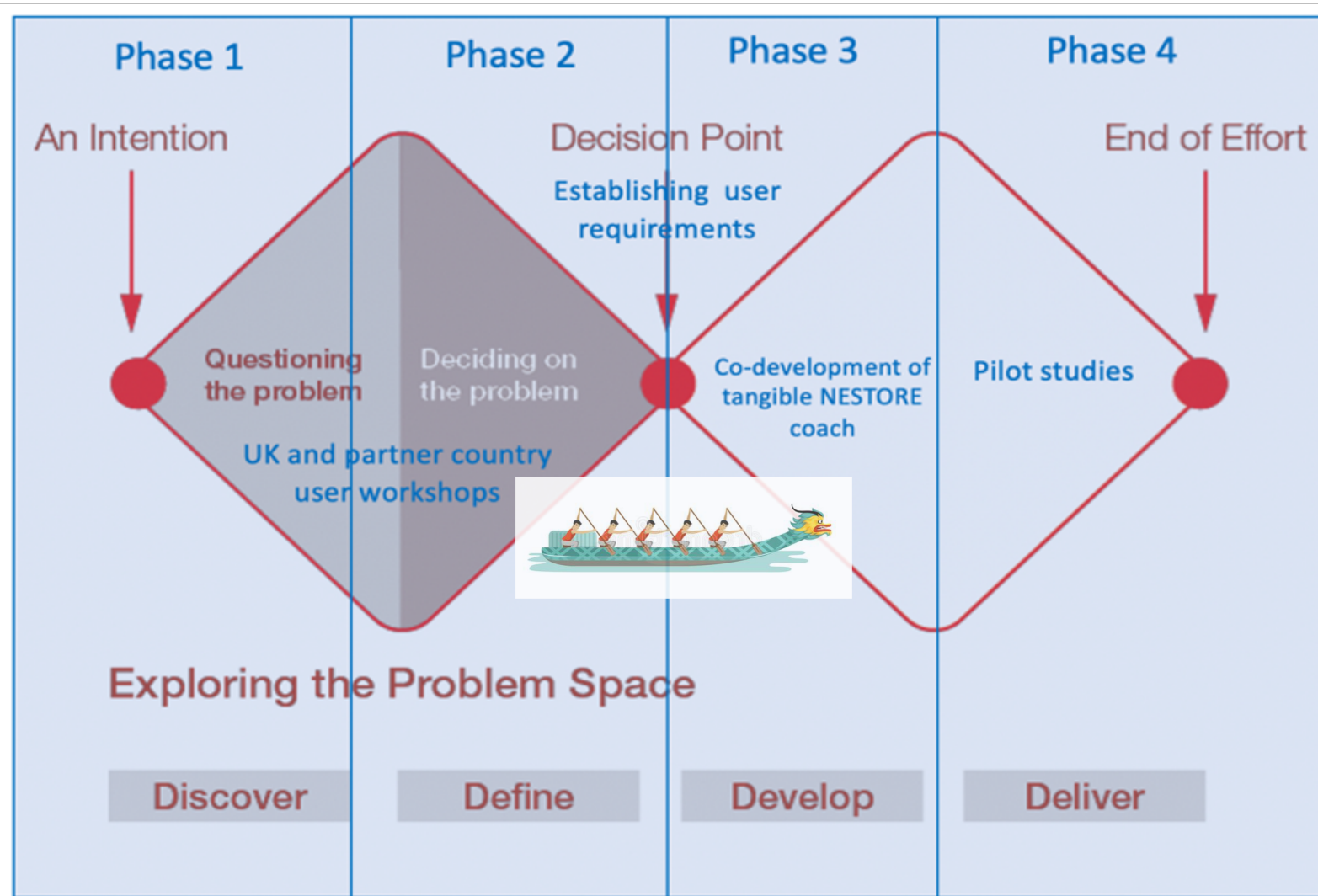
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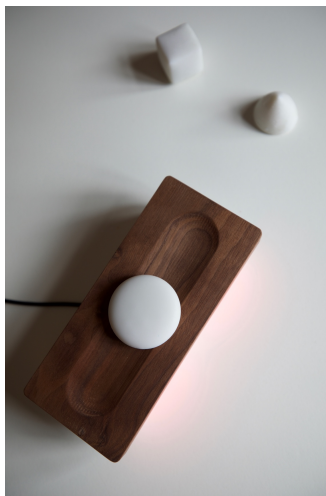


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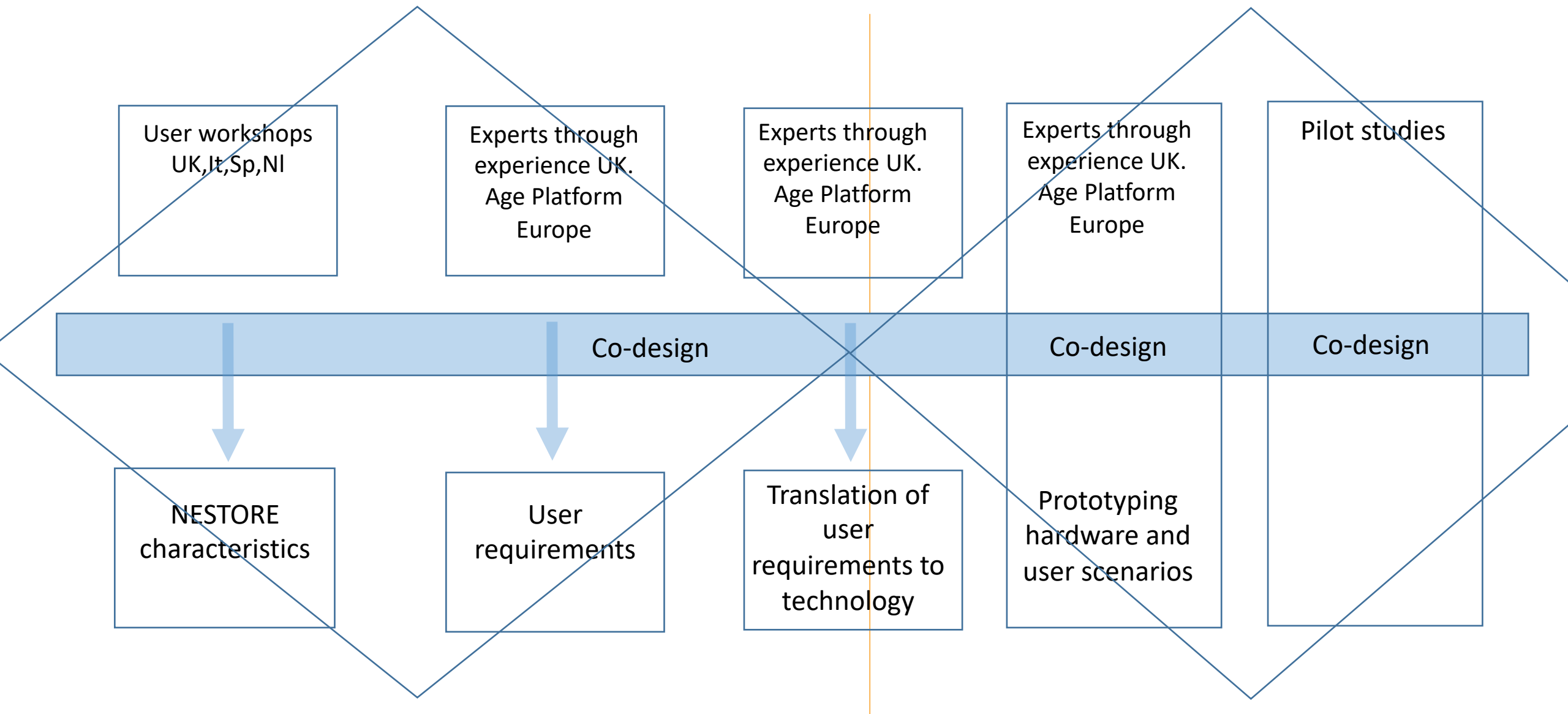
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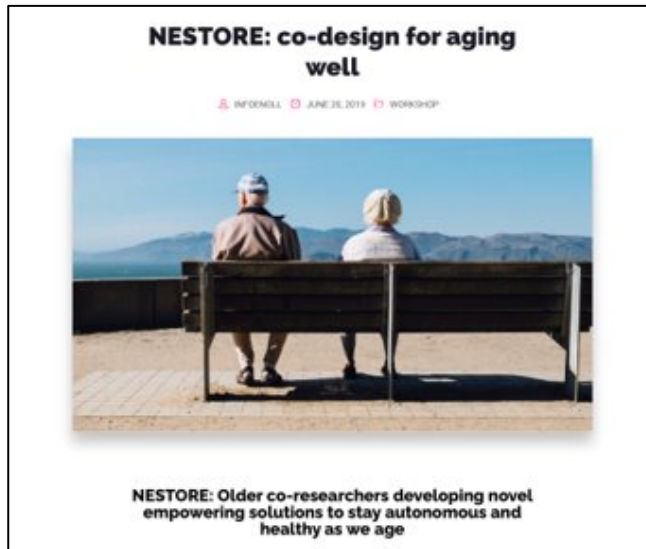


Core themes emerging from co-design	Key partners to implement user requirements emerging from co-design.						How user requirements have been embedded in the design of the NESTORE system
	HES-SO	FLEX	UB	TU Delft	Ropardo	POLIMI	
Cost							
The NESTORE system is affordable - Costs should not be prohibitive to the specified user group.	*	*		*		*	In general cost is considered as a key component of the exploitation plan. However, component and production costs have been a key consideration in the design of the hardware elements of the NESTORE system.
NESTORE should be scalable (e.g. inclusive core features with option to purchase additional functionality)	*	*	*	*	*	*	Additional functionality and upgrade through software and hardware components has been considered as part of the exploitation plan. The NESTORE system has been designed so it is compatible with existing 'commercial off the shelf' devices. It is the intention that users can select pathway options and not committed.
NESTORE should be accessible and considers Network coverage		*		*	*	*	Users of the NESTORE system can engage in some NESTORE activities without the need of internet connection (e.g. wearable, Game). NESTORE has been designed to fit in with users' daily routines, however frequent connection is required to sync with the data devices for updates.
Trust							
NESTORE has considered Privacy, security and the reliability of the system			*	*	*		Data sent to the cloud follows security protocols set out by Ropardo. The Pocket Odyssey Game does not store any data online. Data is only stored on the user's personal device.
The system's management of data is transparent. Users are aware of where data goes and how it is used. The user has control over their privacy settings (in a usable manner) and who has access to the data)	*			*	*		The system has been designed to provide intuitive and useful feedback to the user of the collected data. The user data will provide direct control on single data points (deleting or modifying the stored information). However, all

## Embedding user requirements into the NESTORE system







Chamberlain, P. Craig, C., Dulake, N., 'Thinking through things', 13th International Conference Interfaces and Human Interaction MCCSIS, Proceedings, Porto July 2019.



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# Lessons learnt

- **Trust** / Privacy
- **Fits my life** / customisation
- **Cost**
- **Co-design**
- COVID +ve and -ve



# Lessons learnt

- **Trust** / Privacy
- **Fits my life** / customisation
- **Cost**
- **Co-design**
- *COVID +ve and -ve*





**Thank you from NESTORE!**

Professor Paul Chamberlain

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