# Empowering future care workforces:
Scoping Capabilities to Leverage Assistive Robotics through Co-Design

Research team

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1. Project aims

- Understand how health and social care professionals can benefit from using assistive robotics on their own terms
- Specify capabilities that matter to professionals, service users /carers
- Scope a framework for co-designing assistive robotics that forefronts health and social care professionals and service users
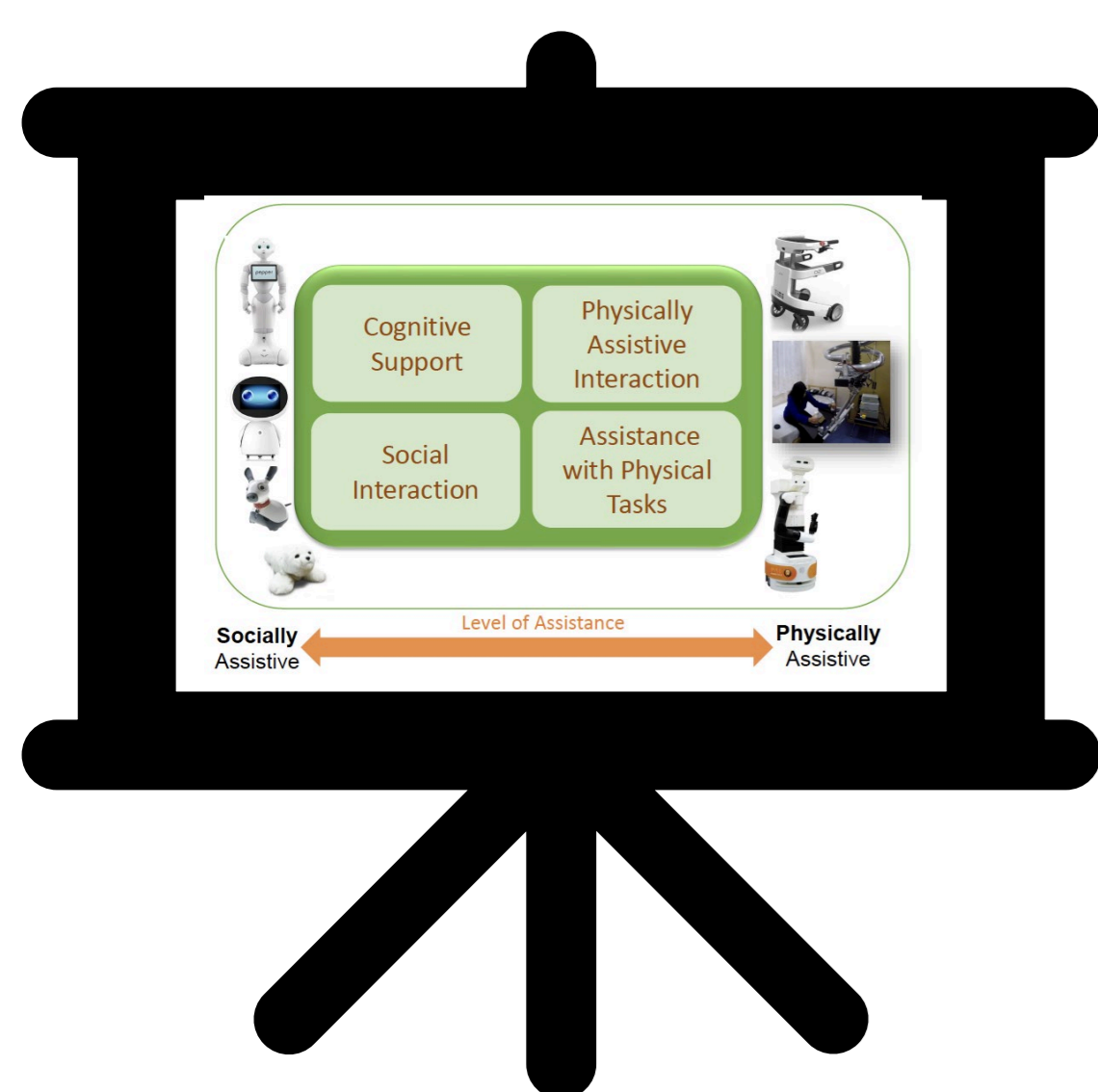
## 2. What's at stake

Disempowerment and exclusion
As governments invest in post-pandemic digital transformation, innovation must ensure professionals and unpaid carers are empowered and not excluded from equitable access to technology and support

Assistive technology not adapting to dynamic care settings
Care settings are hugely dynamic environments. Moreover, the capabilities of end-users themselves are often in flux – e.g. because of changing career situations and dynamic, unpredictable workplaces

A future care workforce lacking skills to benefit from technology
Care workforces are often missing from research and innovation on emerging care technologies
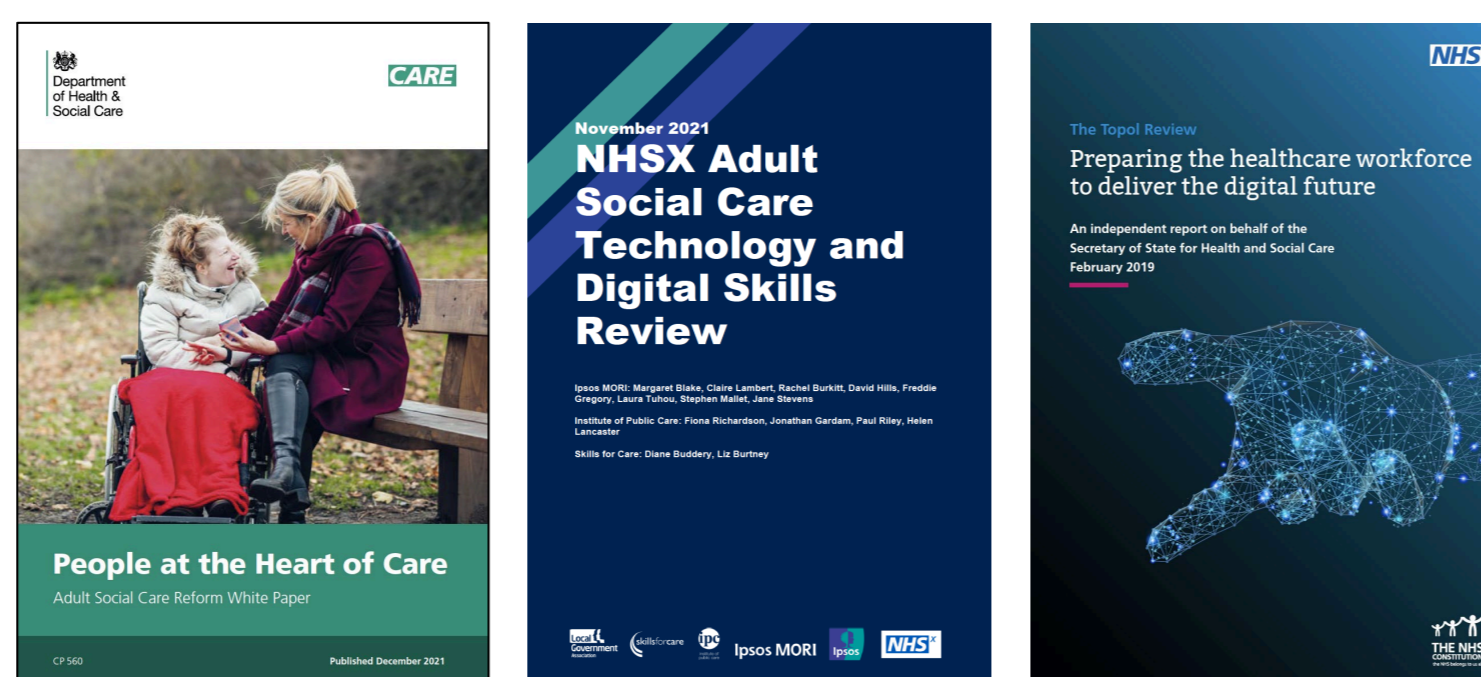
Challenges for Physically Assistive Robots

- Patients/users can have complex multiple co-morbidities and conditions

Types of Impairments: Mobility, Visual, Hearing, Cognitive, Psychological, Speech, Neurological
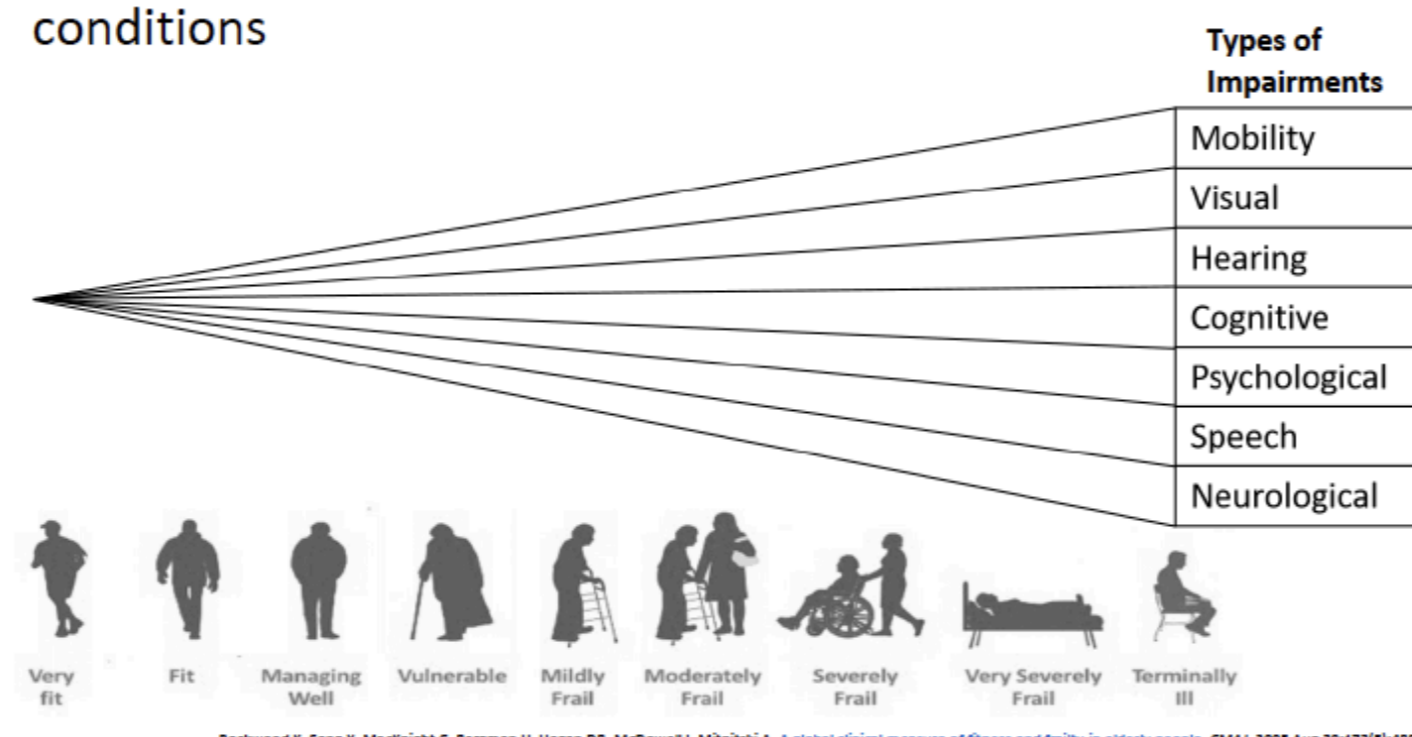
- Robotic assistance must be *adaptable* – behaviour must be easily reconfigurable to different user needs and characteristics
- Operational conditions are complex and multivariate, often with no analytic solutions

3. Research agenda

Who does what and when and how often?
We're asking what human digital capabilities are required to use the technology available today and in the future?

Some possible tasks
1. **System safety assessment**
2. **Initial system configuration**
3. **Training the users(s)**
4. **Verification of system performance**
5. **Updating the system**
6. **Routine maintenance**
7. **Scheduled maintenance**
8. **Breakdown support and repairs**
9. **Ongoing system review**

We are building a co-design framework to steer the research and identify key human digital capabilities.

Working with partners ACPIN (Association of Chartered Physiotherapists in Neurology) and Bristol After Stroke, we are refining topics critical to training curricula for Health Care Professionals (HCPs). Our co-design scoping method will also identify a lead group of trainers with which to develop 'train the trainer' methods in future research.
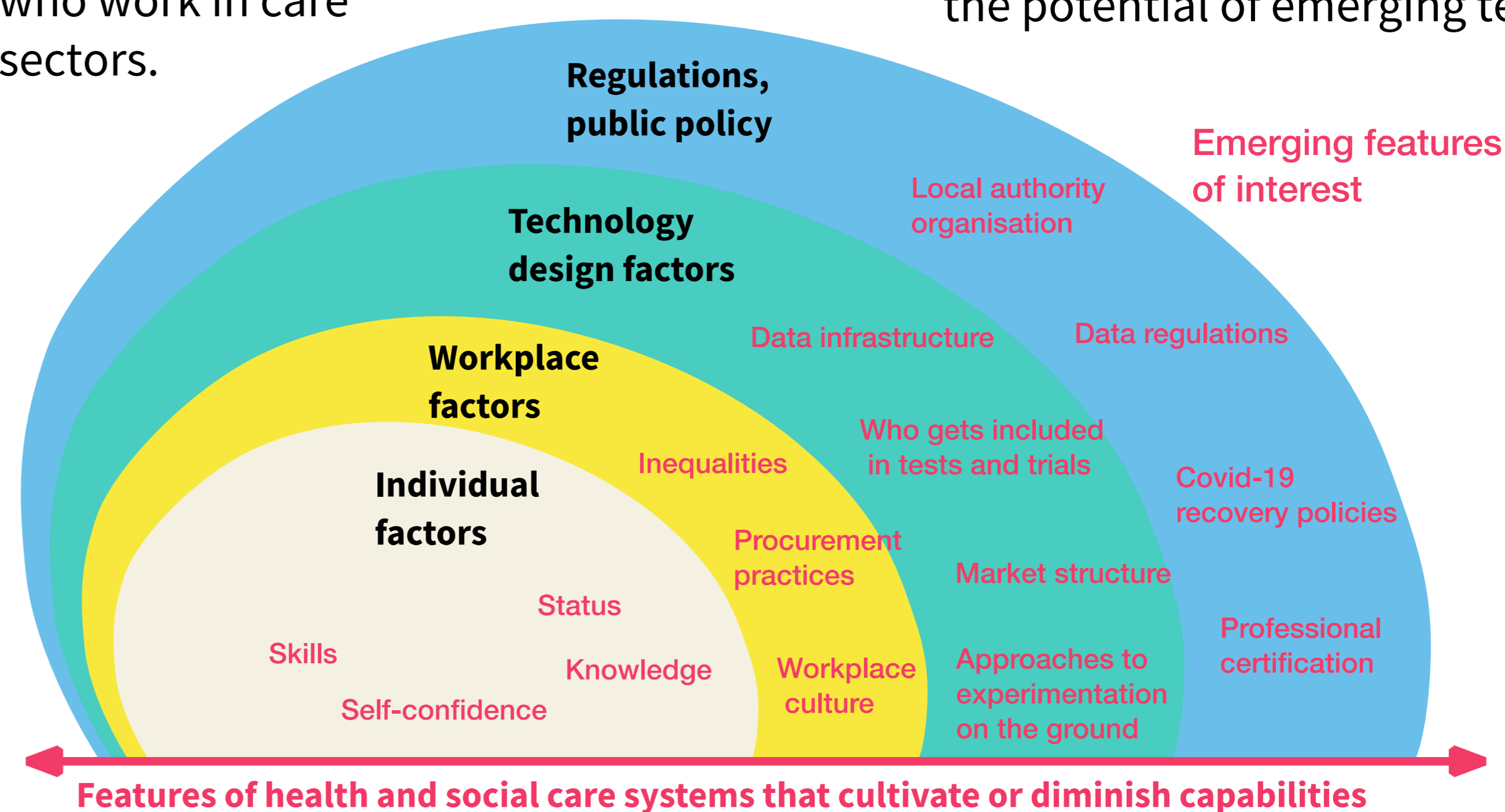
4. Co-design approach
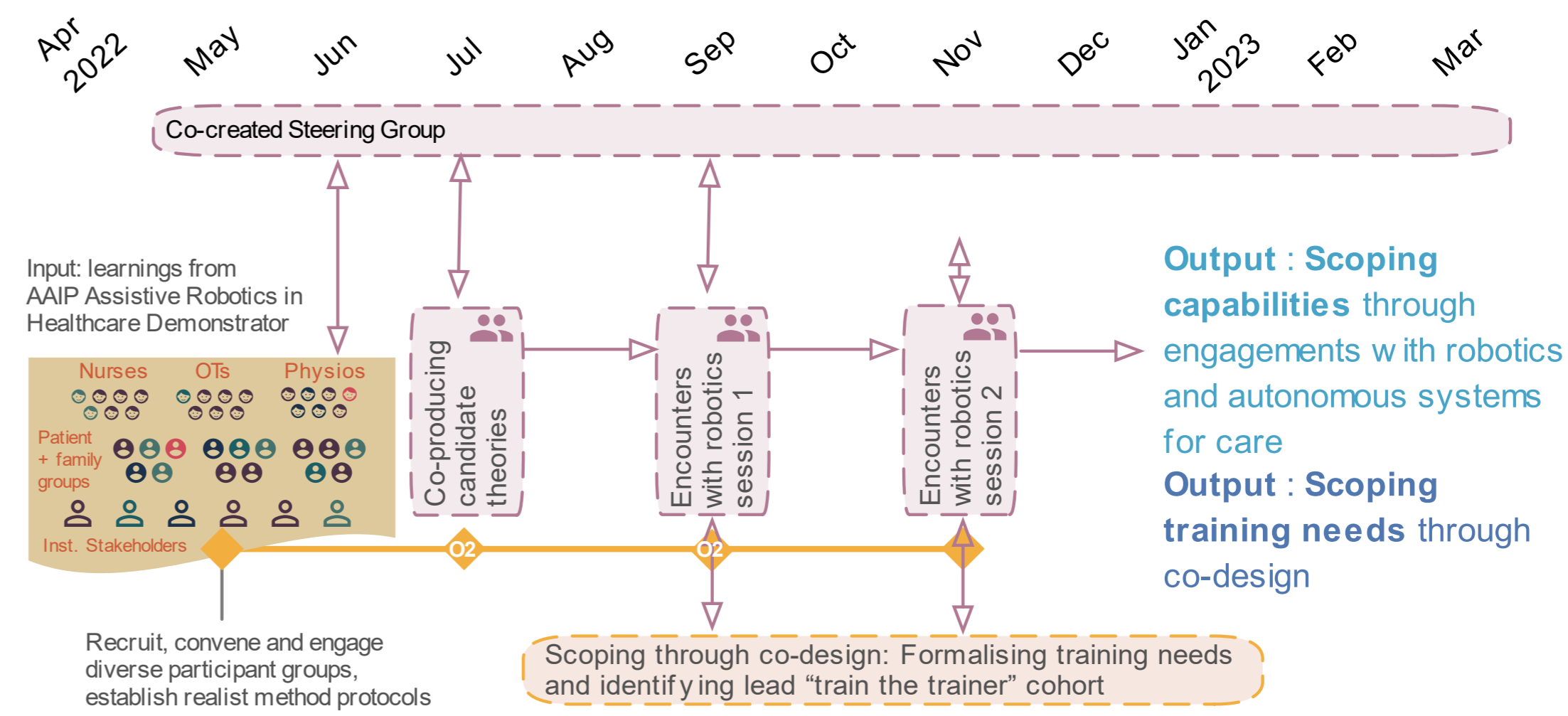
With our co-design steering group we are
- Mapping issues and capabilities that matter to people on the ground
- Testing previous ideas about what capabilities matter, and to whom
- Reflecting and revising emerging theories

5. Scoping human digital capabilities

Entry point for scoping capabilities: Results of previous research, and initial discussions with our steering group have identified **priority areas for capability mapping** – the coloured circles in the diagram below – along with individual factors, unique for each of the millions of people who work in care sectors.

- Continued Professional Development helps professionals connect their individual skills to new knowledge and resources to use assistive technologies
- "Robotics encounters", will help map training needs and test theories about what might contribute to future training plans and help understand the potential of emerging technologies

Regulations, public policy
Technology design factors
Workplace factors
Individual factors

Emerging features of interest
Local authority organisation
Data infrastructure
Data regulations
Inequalities
Who gets included in tests and trials
Covid-19 recovery policies
Status
Procurement practices
Market structure
Professional certification
Skills
Knowledge
Workplace culture
Approaches to experimentation on the ground
Self-confidence

Features of health and social care systems that cultivate or diminish capabilities

6. Emerging directions

Discussions with our steering group have already identified issues for further investigation such as:
- How technology planning and procurement in the NHS and in social care often excludes workforce input
- Legal issues and standards around data; red tape around experimentation in practice
- Improving integration – need for better communication and coordination between professionals and services
- Changing contexts of (i) care workforce through career stages and (ii) service users' care pathways through clinical and domestic settings
- How inequalities are tied to disempowerment today

To figure out how people in health and social care might be empowered in the future, we need to understand what leads to health and social care professionals being disempowered by technology and their environment today.

7. Milestones & outputs: April 2022 - March 2023

- Establish co-design **steering group** ☑
- Establish recruitment pathways with project partners, old and new ☑
- Host series of **accessible robotics engagements** with a diverse group of professionals, unpaid carers, care receivers and family-members
- **Present ongoing findings** to partners orgs such as ACPIN ☑ and others
- **Curriculum development**: scope training needs for near-future health and social care professionals, continued professional development, and policy
- Identify **train-the-trainer methods** and participants for future projects
- Identify subset of **capabilities for responsible innovation** in assistive robotics