The Future of Technology in Social Care Series

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House Keeping

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- On a phone, tap the screen to see the controls – choose More and then Q&A
- You will get access to the recording and the presentation (inc links)

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2

Agenda

Time	Agenda Item	Speaker
3:00 – 3:10	Welcome and Overview of Robots in Social Care	Professor Vic Rayner OBE
3:10 - 3:30	Robotics in hybrid models of care delivery	Rob Parkes
3:30 – 3:50	User acceptance of non-intrusive sensing technology and physical robots among older adults: A survey	Dr Yordanka Karayaneva
3:50 – 4:10	Empowering care workforces	Dr Cian O'Donovan
4:10 – 4:25	Q&A session for the panel	All
4:25 – 4:30	Close	Professor Vic Rayner OBE

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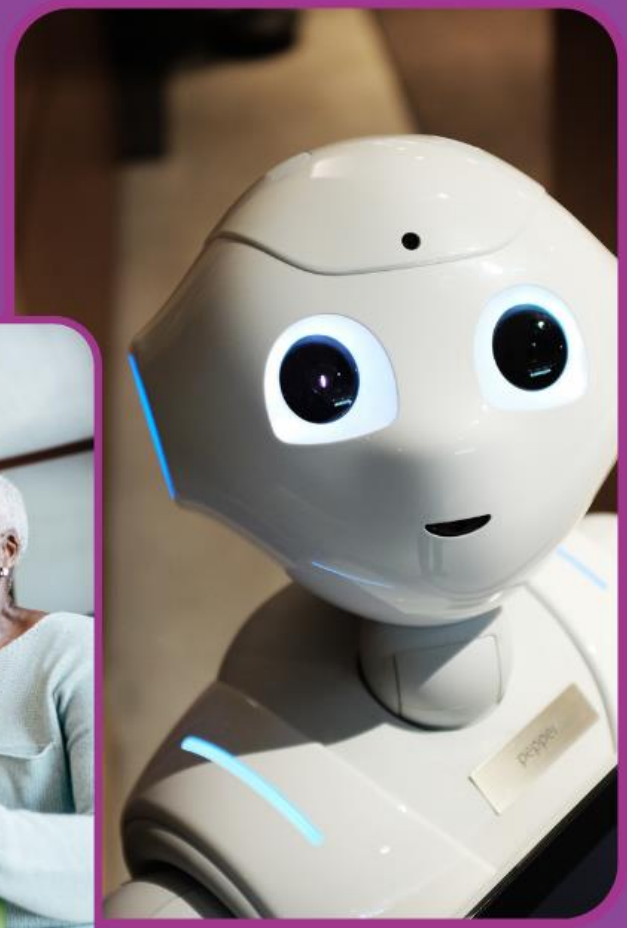
FREE WEBINAR

- Robotics
  - 12 January 2023, 3 - 4:30pm
- Artificial Intelligence
  - 8 February 2023, 1 - 2:30pm
- Implementation
  - 6 March 2023, 2 - 3:30pm



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Robots transform the workforce

"Necessity will drive a shift as organisations and entire sectors realise that adopting robotics at scale is the only way to deliver the output they need with the workforce they have available. The result will be workforce transformation […] People often worry about robots taking people's jobs. But none of the countries that have adopted robots on a large scale—Germany, Japan, Singapore and South Korea—has a problem with unemployment. And all of them have a higher proportion of their workforces employed in manufacturing than America does. More robots, in short, seem to be associated with more manufacturing jobs."

- Kim Povlsen, president, Universal Robots https://www.economist.com/the-world-ahead/2022/11/18/kim-povlsen-says-we-should-welcome-robots-not-fear-them

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Robotics in the United States

Leading Age – the largest community of non-profit aging services providers and other mission-driven organizations serving older adults in the USA – published their 19th Annual LeadingAge Ziegler (LZ 200) report in November 2022.

This showed that of the 200 largest not-for-profit senior living organisations in the USA, **57%** have implemented robotic processing automation and **43%** have added physical robots.

Robotics in hybrid models of care delivery

Rob Parkes
CEO
GenieConnect® | Service Robotics Ltd

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ROBOTICS IN HYBRID CARE DELIVERY

Rob Parkes, CEO at Service Robotics

Genie Connect

A new era is here

The care landscape is changing and robotics are at the forefront

Setting the Scene

13,600 medically fit patients waiting to be discharged

Each blocked bed costs the NHS £180,000 per year

165,000 care vacancies

1.2million older adults feel lonely and over half of disabled people reported feeling lonely

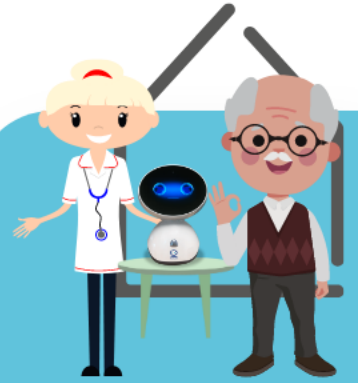
The robotic landscape

CONSUMER AI

- Alexa
- Google Home
- Siri

COMPANION ROBOTICS

- RoboPets
- Hasbro
- Tombot



SERVICE ROBOTICS

- GenieConnect
- Akara
- Pepper

The robotic landscape

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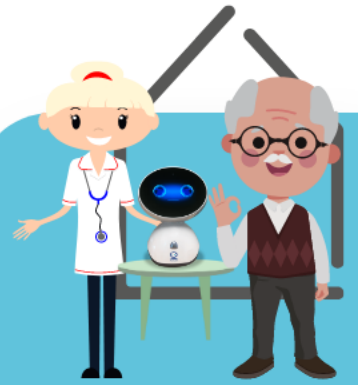

SERVICE ROBOTICS

- GenieConnect
- Akara
- Pepper

Genie

Companion App

The Care Portal

Introducing a new care model

Hybrid care models represent a real opportunity to increase care delivery capacity and quality. They allow an increase in-person care delivery efficiency, through the addition of remote care. Conservative estimates show a 15% improvement in care delivery capacity with hybrid models.

HOME CARE

HYBRID CARE

REMOTE CARE

Case Study #1 Loneliness

Older Adult Care

Meet Mr T

Isolated due to remote location, illness and lack of access to support

"Well look at that, you are right there"

Companionship to reduce loneliness and isolation

Digital equality and accessibility

Improved mental wellbeing

Case Study #2 Independent Living

Learning Disabilities

Meet Adam

Missed appointments and essential medication

"It's better than my phone because I'm so used to my phone's reminders."

Audible & visual reminder encourages to take mediation

Increases his self-awareness of how he is feeling

Attending all healthcare appointments

Case Study #3 Reablement

Home From Hospital

Meet Jane

Had a serious accident and was unable to walk.

- 1 in-person visit per day for 3 weeks, then 3 times a week
- Daily mood check-ins
- Exercise reminders

Flexible plan to meet changes in need

Daily tasks progression

Reassured her mood was being monitored

Increasing Care Capacity

With Hybrid Care

Genie
Connect

Discover More

Book a demo

https://1.genieconnect.co.uk/demo

Available Funding

Invest To Save Calculator

Dashboard Data

Want to give us feedback?

Share your thoughts on the overall experience, content, and speaker.

Estimated time 4 minutes

https://forms.office.com/e/YdCACMrNWU

User acceptance of non-intrusive sensing technology and physical robots among older adults: A survey

Dr. Yordanka Karayaneva (y.karayaneva@tees.ac.uk)
Lecturer in Computer Science
School of Computing, Engineering & Digital Technologies, Teesside University

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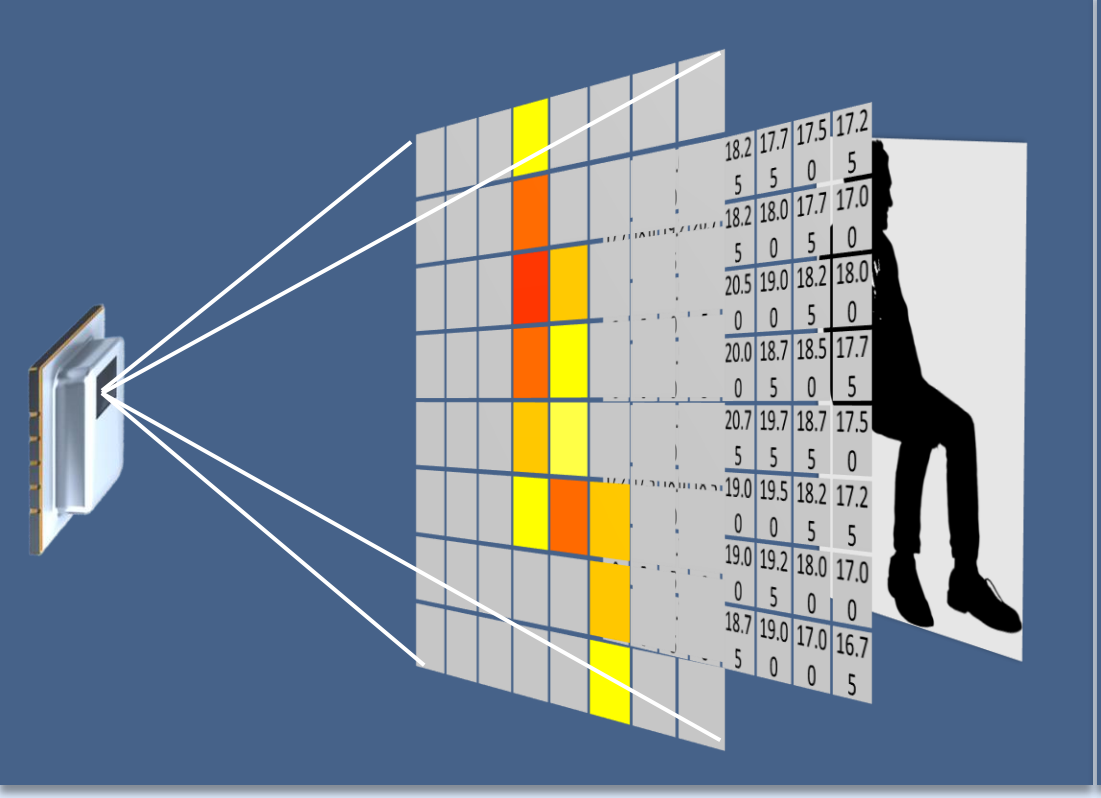
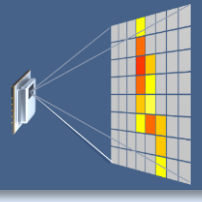


User acceptance of non-intrusive sensing technology and physical robots among older adults: A survey

Dr. Yordanka Karayaneva (y.karayaneva@tees.ac.uk)
Lecturer in Computer Science
School of Computing, Engineering & Digital Technologies, Teesside University

Teesside University



Outline

- Study aims of the survey
- Data collection
- Study findings
  - Non-intrusive sensing technology
  - Robots with a physical presence
- Discussion

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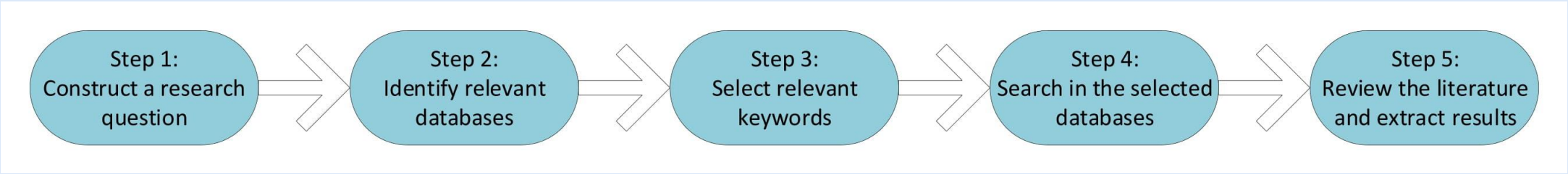
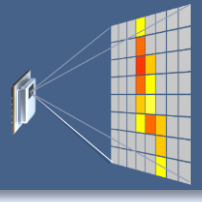
Study Aims

- The following aspects have been identified as important by the literature review:
  - Acceptance of monitoring technology
  - Acceptance of robots for making decisions
  - Preferred appearance
  - Acceptance of a robot's physical work and social roles
  - Acceptance of different functions of the robot





Data Collection

- The survey questionnaire was administered in September / October 2019
- The questionnaire included illustrative examples
- Extra time was spent to familiarise the residents with the studied concepts
- Participants could answer either in writing or verbally

Gender	Number	Age±SD	Age range
Female	18	90.55±4.49	81-99
Male	3	89.66±4.18	84-94

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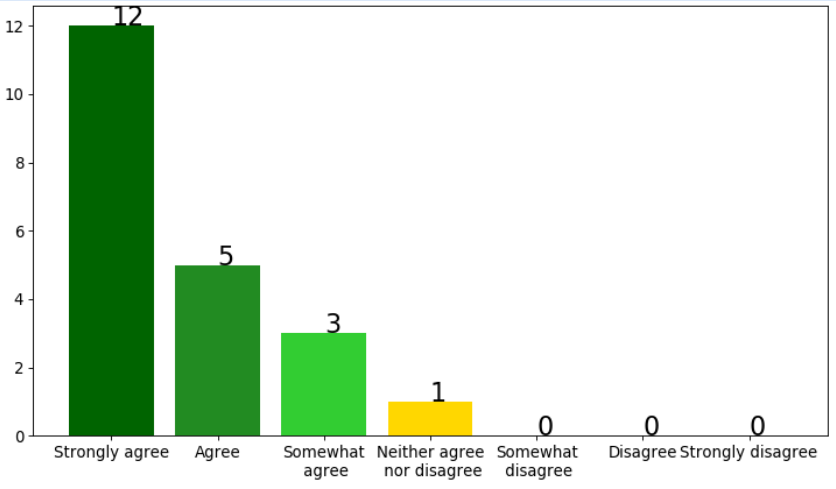
Study findings

- Q1 and Q2 aimed at investigating the perceived usefulness of non-intrusive sensing technology based on:
  - Physical health and well-being (a)
  - Mental health and well-being (b)



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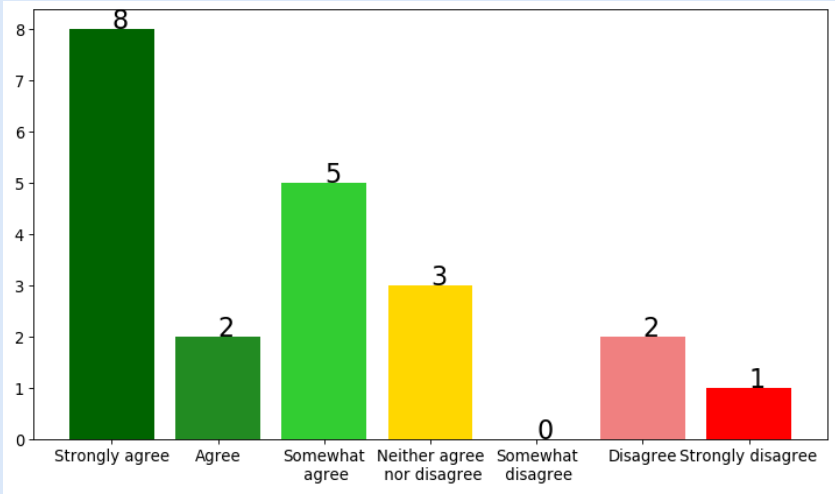

(b)

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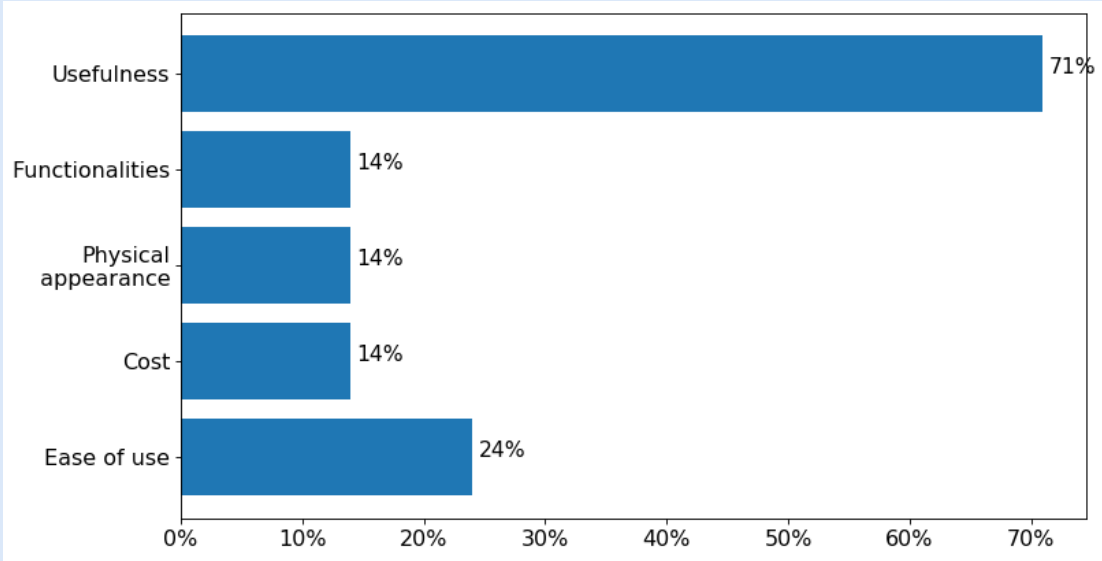
Study findings

- Q3 aimed at investigating the factors affecting the user acceptance of robots with a physical presence:
  - Usefulness
  - Ease of use
  - Functionalities
  - Physical appearance
  - Cost



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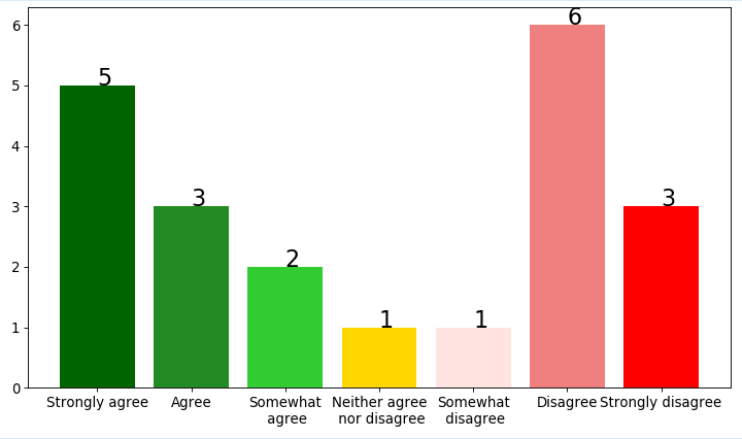
Study findings

- Q4 and Q5 aimed at investigating how likely the residents are:
  - To accept a robot at home by agreeing or disagreeing with the statement “I am likely to use robots in my home” (a)
  - To accept a robot for making decisions (b)



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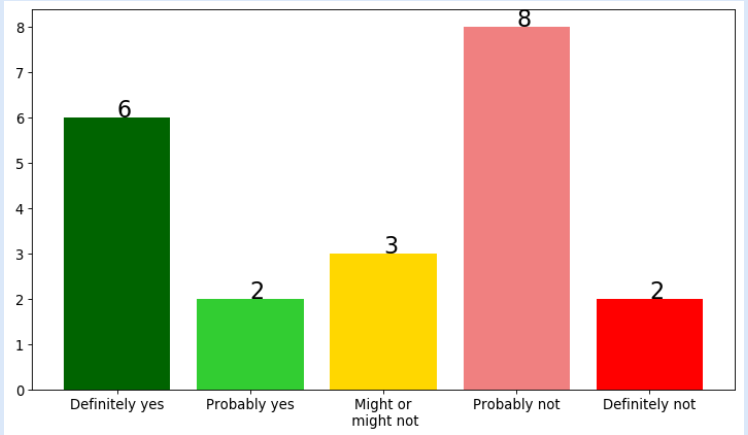
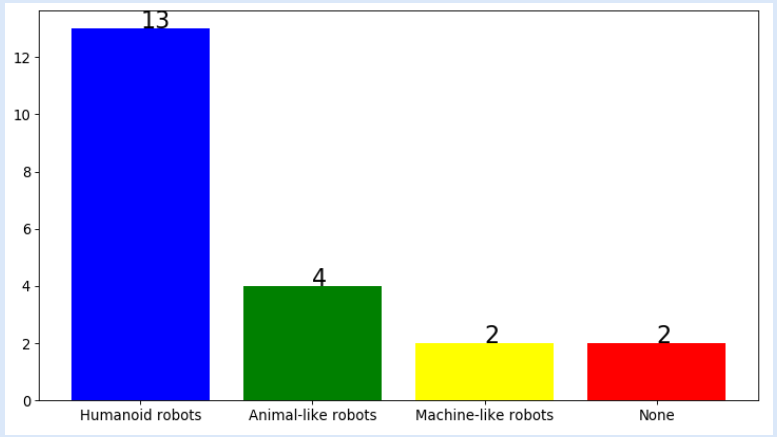


(b)

Study findings

- Q6 aimed at investigating the preferred robotic physical appearance:
  - Humanoid robots (a)
  - Animal-like robots (b)
  - Machine-like robots (c)



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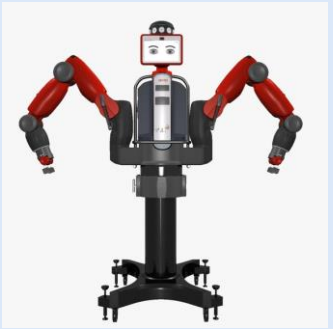

(c)

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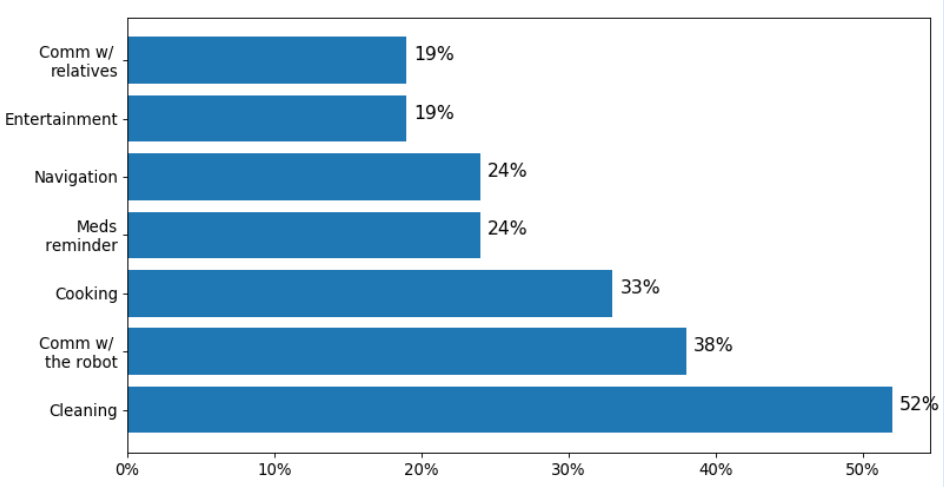
Study findings

- Q7 aimed at investigating the most preferred activities (physical and social) to be preferred by a robot:
  - Communication with relatives
  - Entertainment
  - Navigation
  - Medicine reminder
  - Cooking
  - Communication with the robot
  - Cleaning



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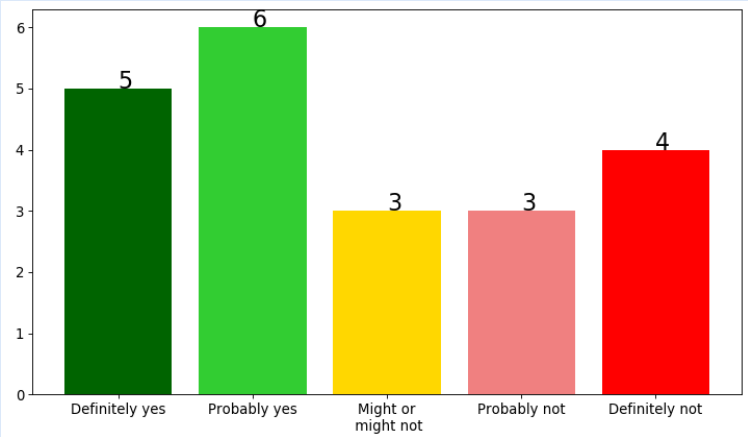
Study findings

- Q8 and Q9 aimed at investigating whether robots with a physical presence can improve the residents':
  - Physical health and well-being (a)
  - Mental health and well-being (b)



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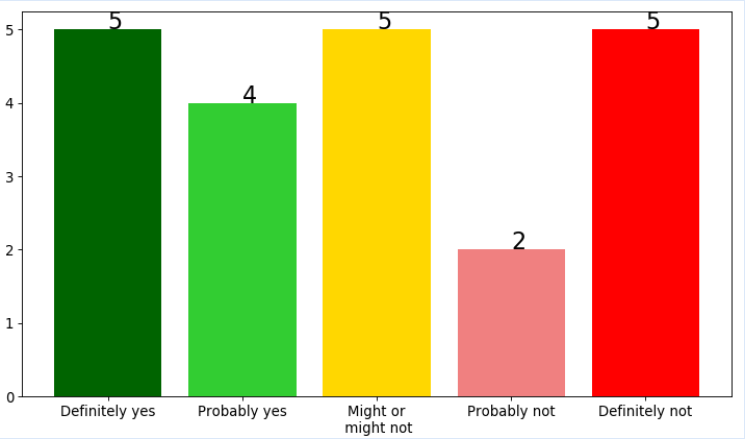

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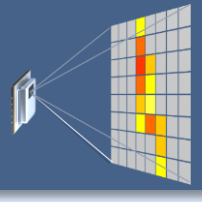

Discussion

- Non-intrusive technology revealed higher user acceptance than physical robots
- The most preferred robotic appearance was humanoid, while the preferred factors were usefulness and ease-of-use
- Cleaning showed the highest user acceptance considered activities to be conducted by a physical robot

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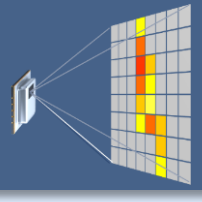

Q&A

Thank you!

Teesside University

Empowering Care Workforces

Dr. Cian O'Donovan

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Empowering future care workforces

The potential and practicalities of robotics in care

Cian O'Donovan
Senior Research Fellow
UCL Department of Science and Technology Studies
c.o'donovan@ucl.ac.uk | @cian

PROJECT PARTNERS

April 1st 2022– March 31st 2023

Empowering Future Care Workforces:

Scoping Capabilities to Leverage Assistive Robotics through Co-Design

How can **health and social care professionals** benefit from using assistive robotics

in ways that are safe, trustworthy, legal and ethical?

PROJECT PARTNERS

THE PROJECT WORKFORCE

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Co-Investigator:
Prof. Robin Williams
Professor of Social Research on Technology University of Edinburgh

Co-Investigator:
Dr. Siabhainn Russell
Research Fellow
UCL Dept. of Science and Technology Studies

Partner:
Adine Adonis
Chair, ACPIN - Association of Chartered Physiotherapists in Neurology

Partner :
Rebecca Sheehy
Chief Executive
Bristol After Stroke

Physically Assistive Robots

Example Applications:

- ❑ Walking assistance
- ❑ Sit-to-stand and mobility assistance

Functional Support for:

Maintaining independence	Physical support for tasks such as dressing, walking, food preparation
Enabling Rehabilitation	Supporting frequent and guided practice of exercises
Addressing care staff shortages	Reduction from two carers to one, or even zero for mundane tasks
Alleviation of physical workload for carers	Reduces injuries such as back strain, reduces sickness absence
Providing diagnostic information for carers	Sensor data recording, trend analysis, detection of emerging conditions

Levels of Assistance and Interaction

Double Telepresence Robot

Paro

Consequential MiRo

Softbank Pepper

Toyota HSR

F&P Robotics Lio

LEA

Physical Mobility Assistance

Assistance with Physical Tasks

Cognitive Support

Social Interaction

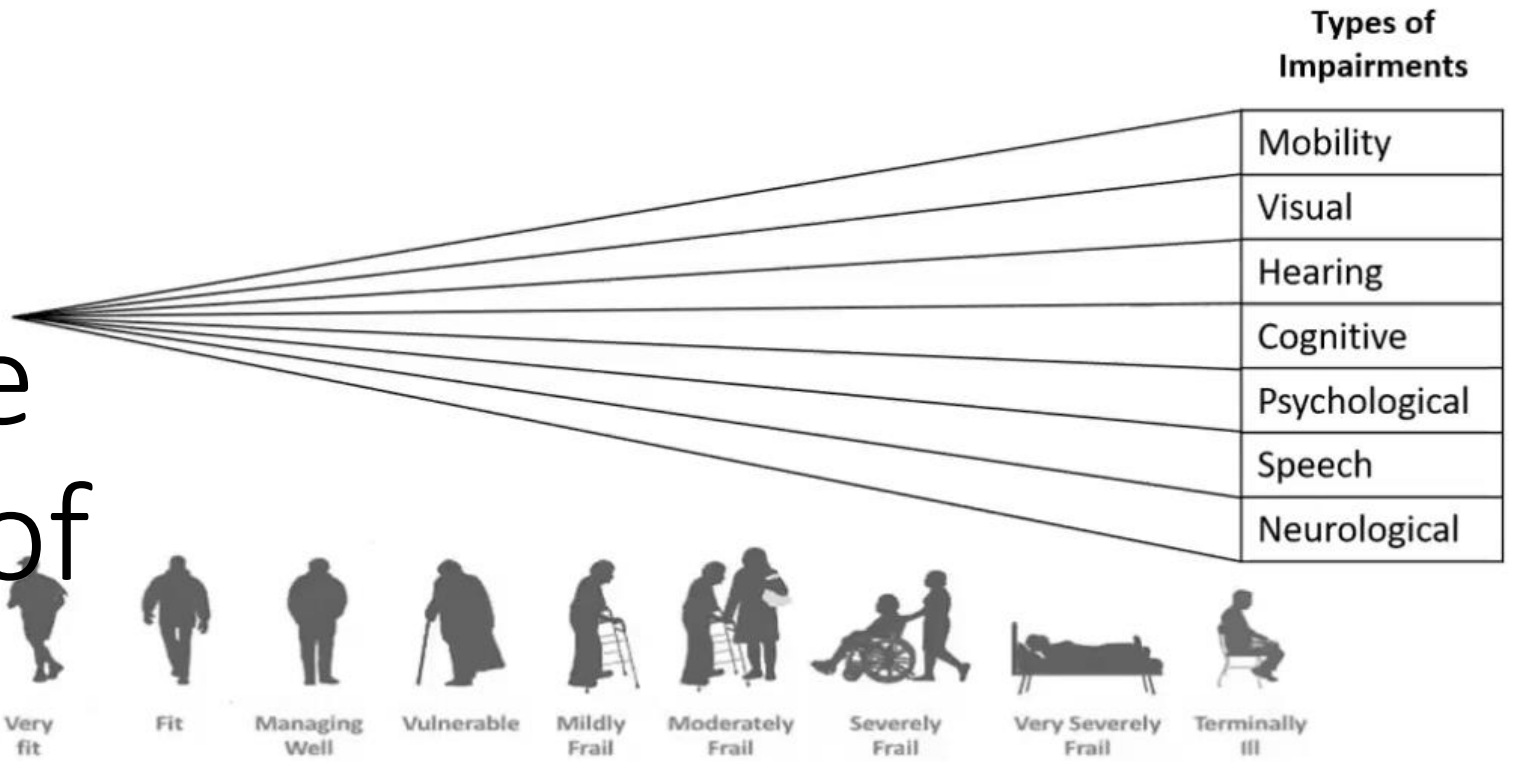
Physicality of the Interaction

Low

High

Level of Physical Assistance

Some of the challenges of using assistive robotics



Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, Mitnitski A. A global clinical measure of fitness and frailty in elderly people. *CMAJ.* 2005 Aug 30;173(5):489-95

- Patients/users can have complex multiple co-morbidities and changing conditions
- Operational conditions are complex and multivariate, often with no analytic solutions
- There is the lack of sufficient data with respect to the potential risks

Project aim

From centering the user, to the workforce

Project aims

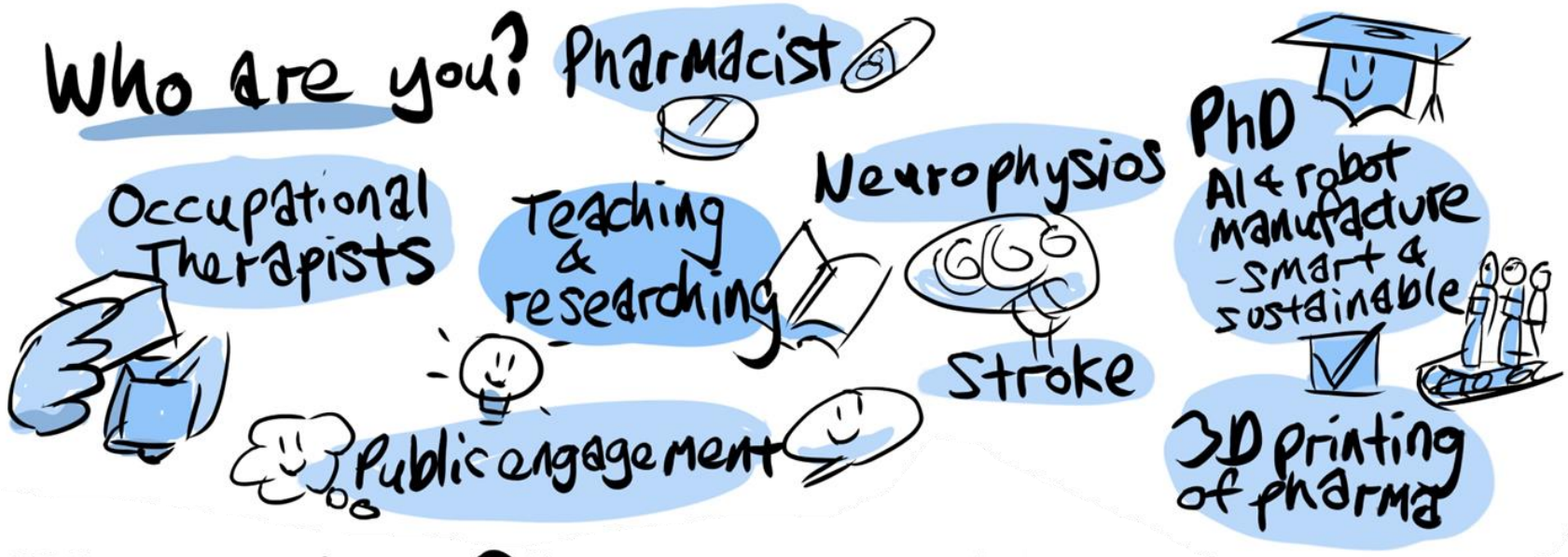
To scope…

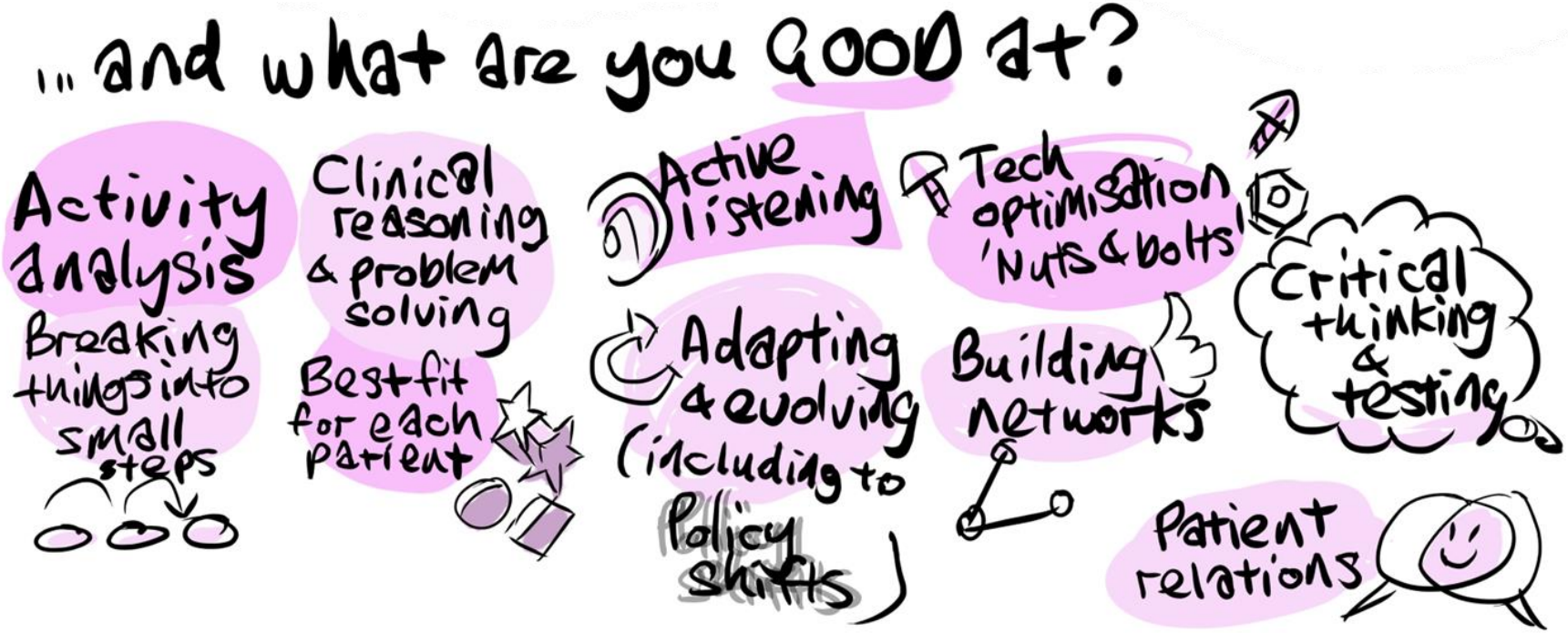
a) what kind of digital capabilities empower care professionals to perform tasks with assistive robots with greater skill, fluency and proficiency, and on their terms?

b) how can these capabilities be **cultivated** via **training** and **responsible innovation?**

We’ve introduced robots to ~30 professionals, service users, patients and family carers value

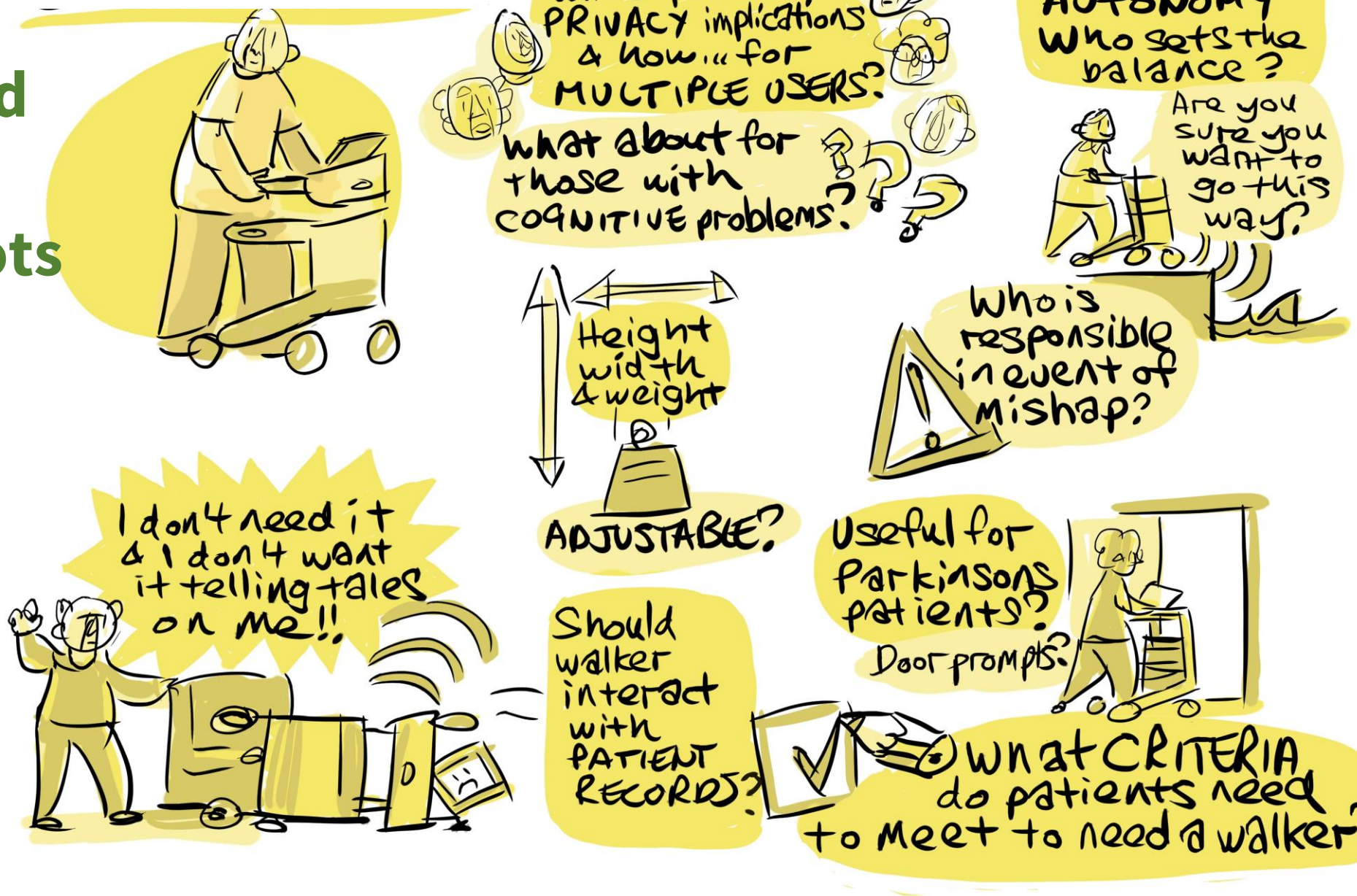
WHAT *SHOULD* YOU BE ABLE TO DO WITH THIS ROBOT?

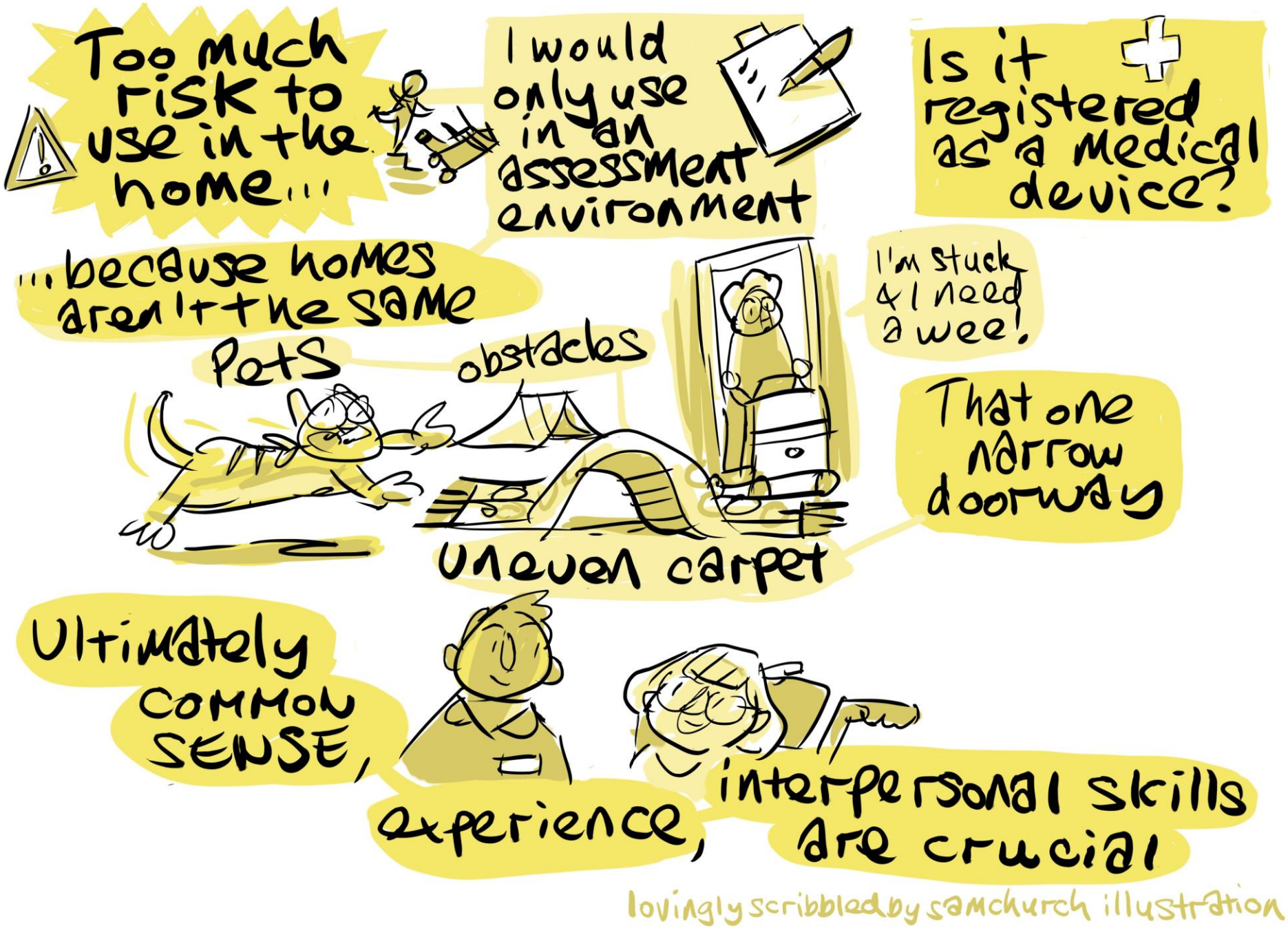




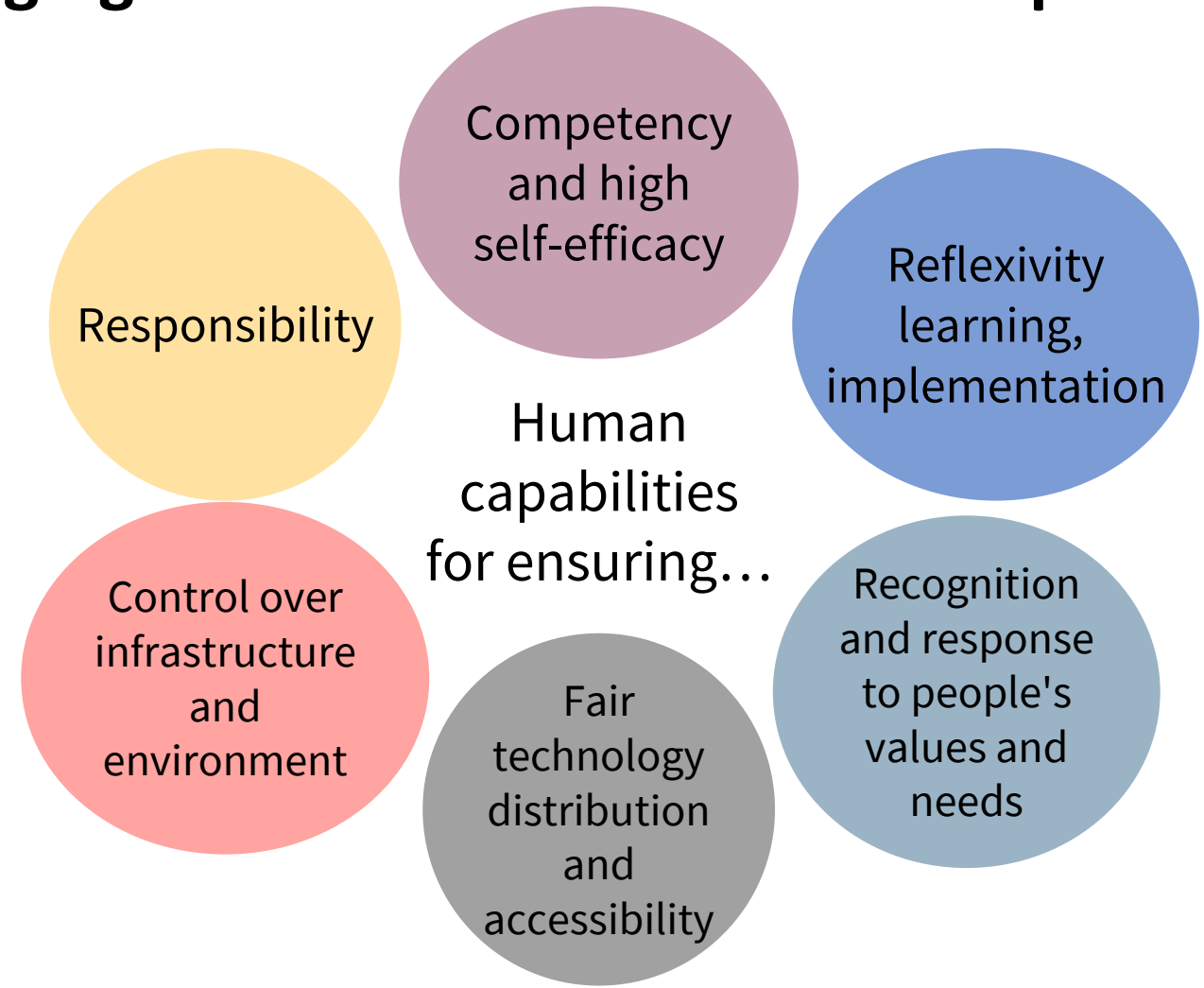
We asked: what capabilities do you already value?

We introduced people to assistive robots and asked: what capabilities will you need to work with them?

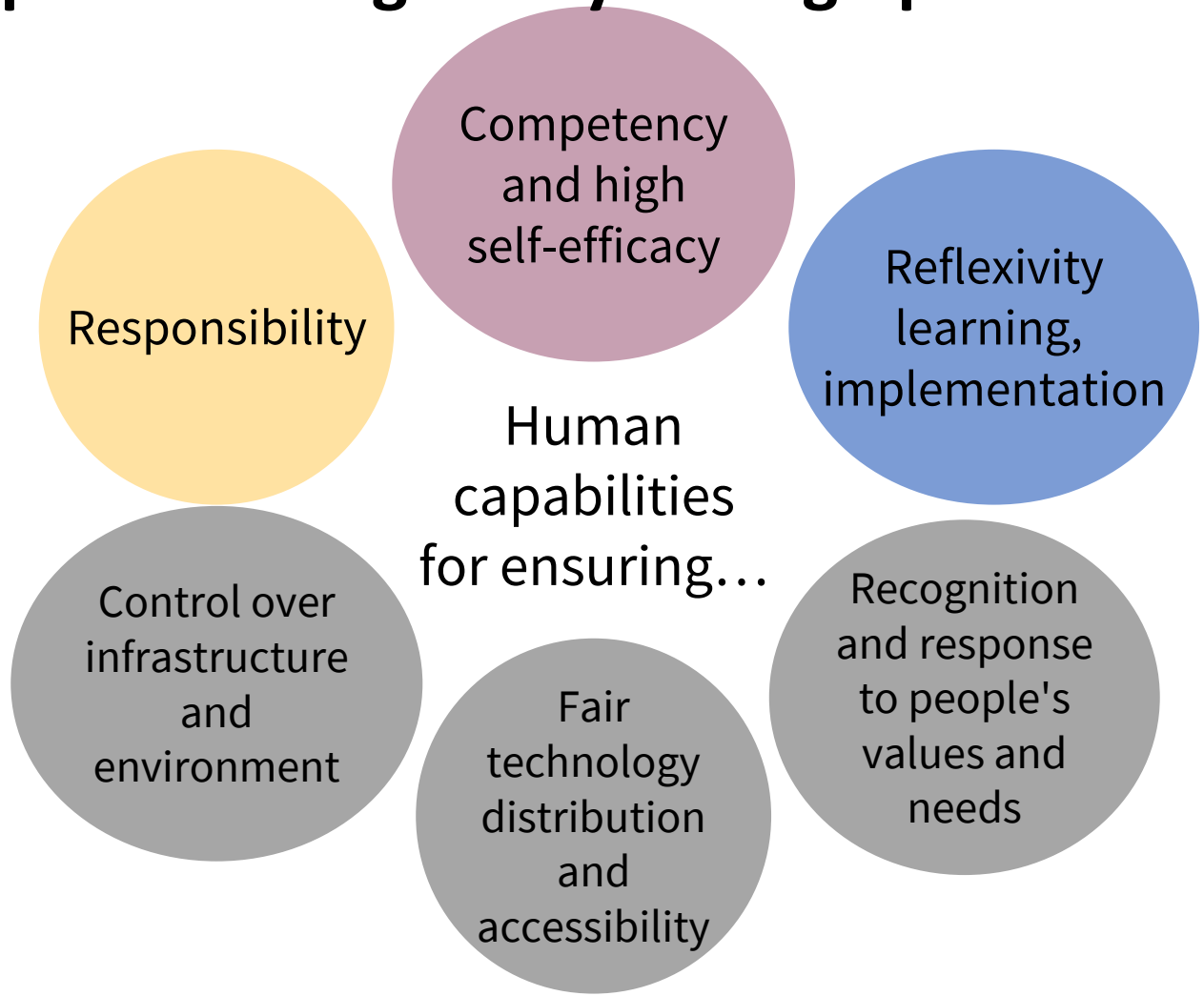


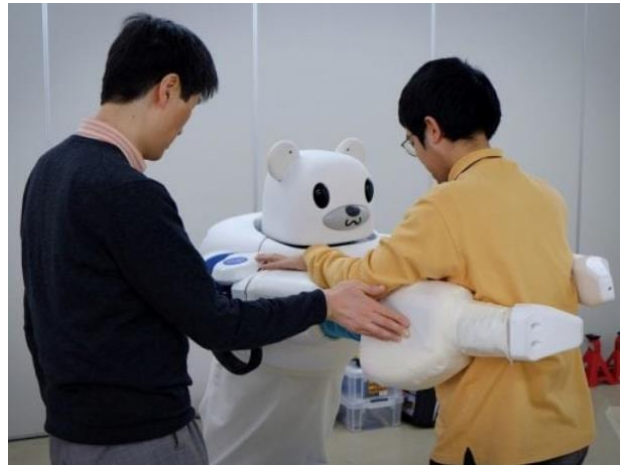

Too much risk to use in the home...
I would only use in an assessment environment
Is it registered as a medical device?
...because homes aren't the same
Pets
obstacles
I'm stuck & I need a wee!
That one narrow doorway
uneven carpet
Ultimately COMMON SENSE,
experience,
interpersonal skills are crucial
lovingly scribbled by samchurch illustration

Emerging: six sets of valued human capabilities

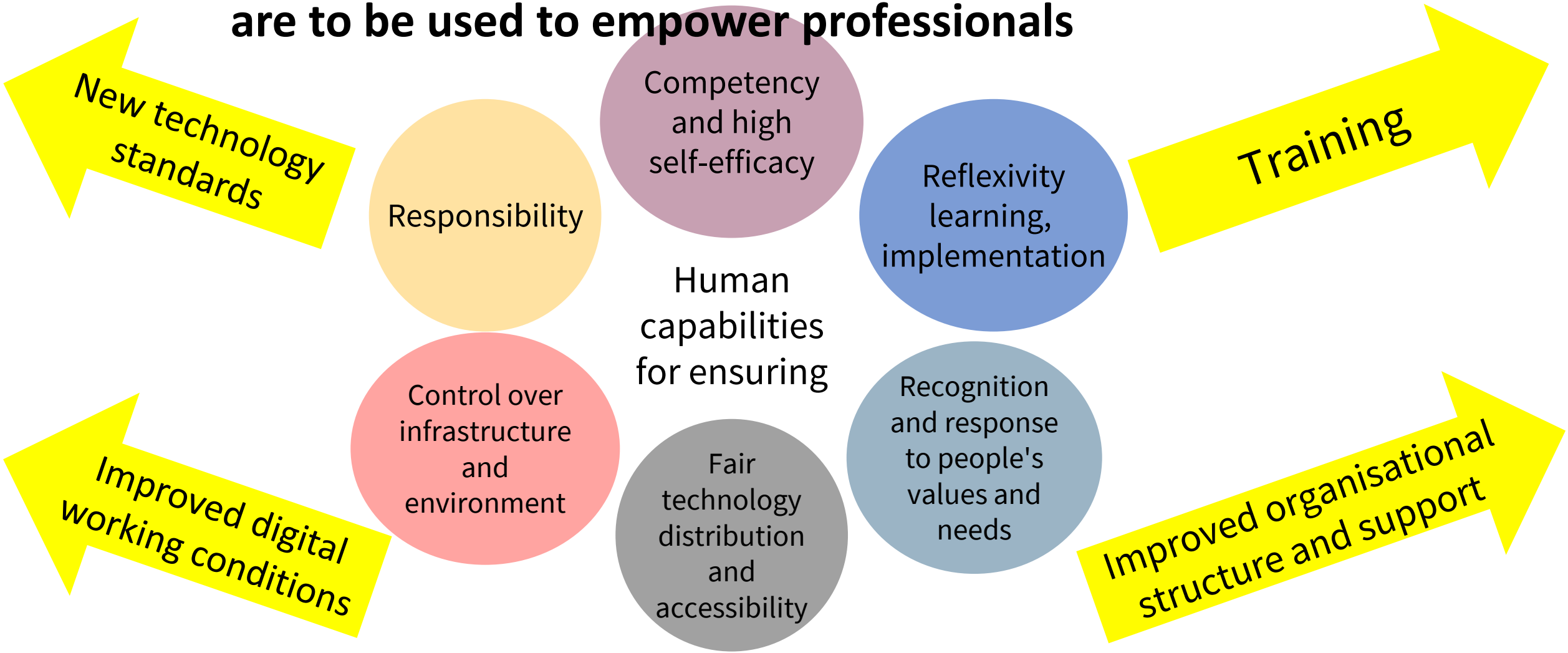


Example: Ensuring safety during operation

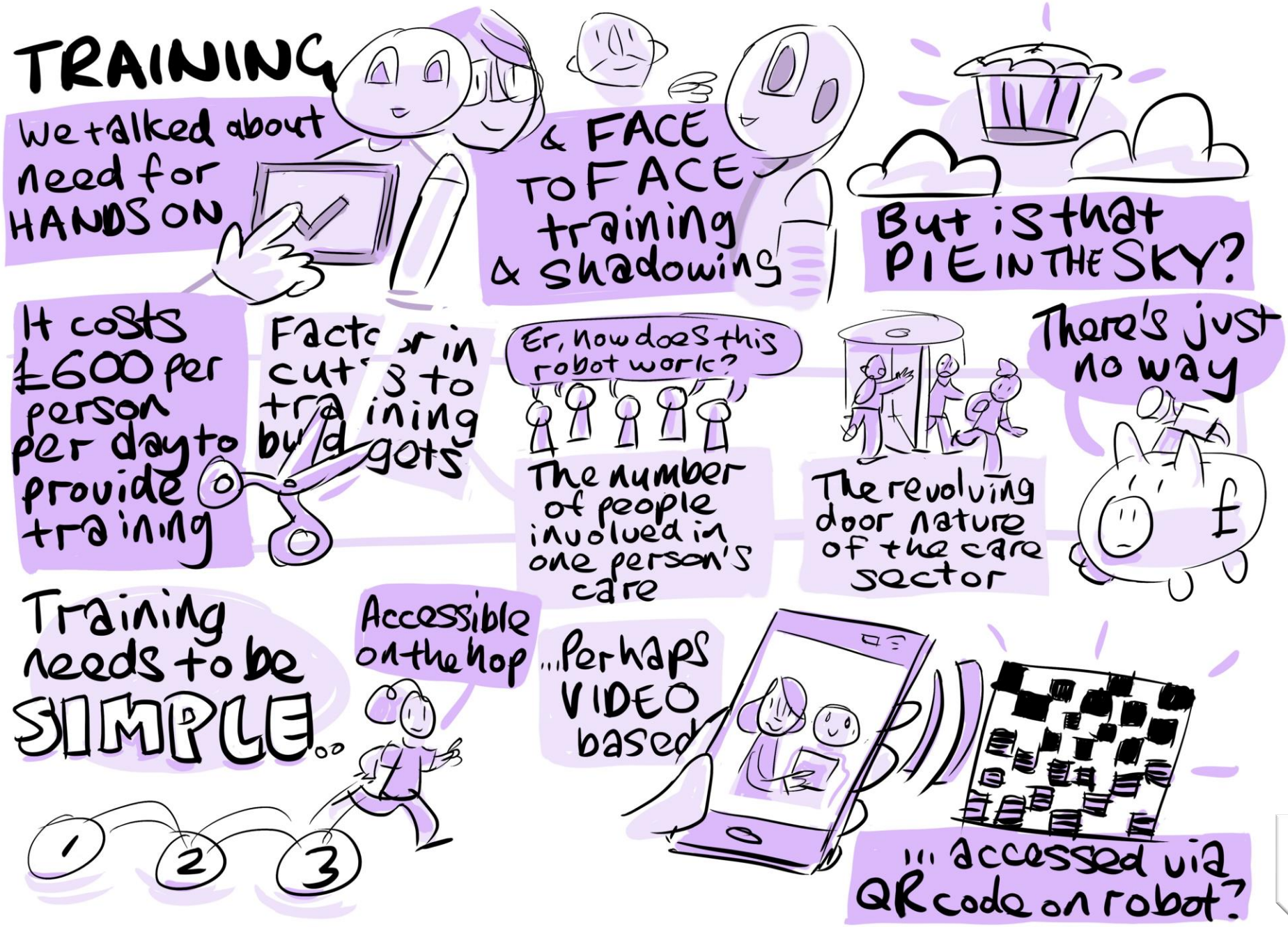




Expanding these capabilities are a must if assistive robots are to be used to empower professionals



Next Steps: test ideas about how to expand these digital capabilities (e.g, **through training, better research infrastructure etc.**)

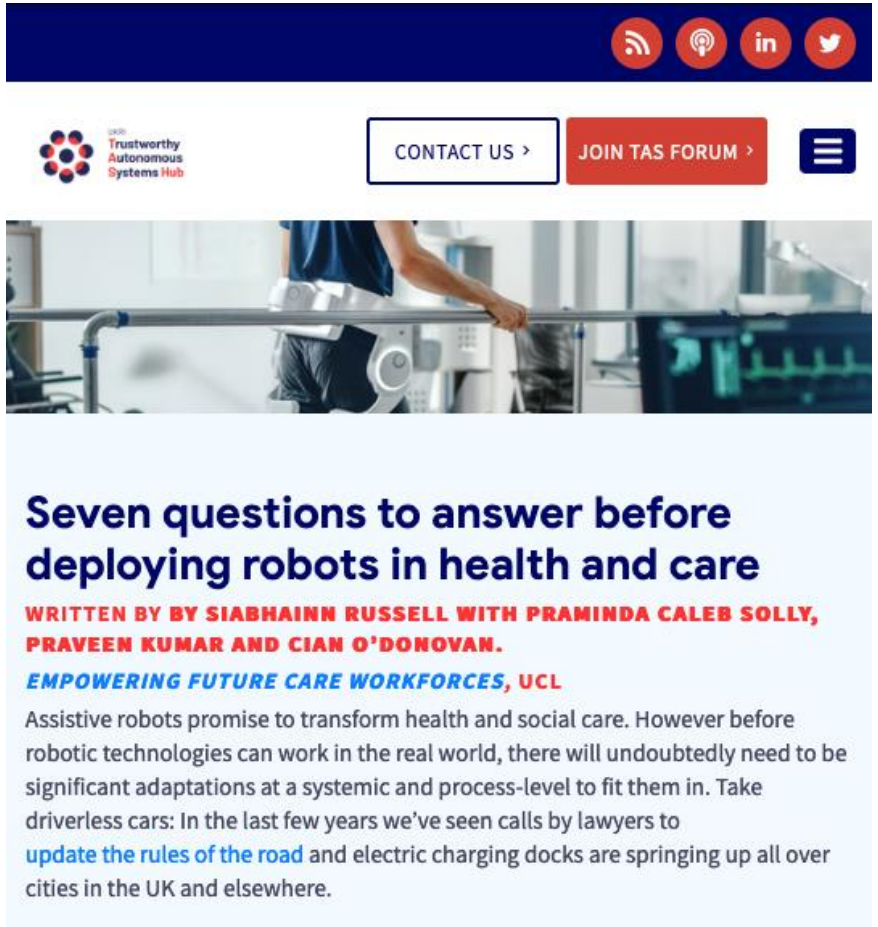


Thinking about training: opportunities to scope interventions with our project partners

PROJECT PARTNERS

So what

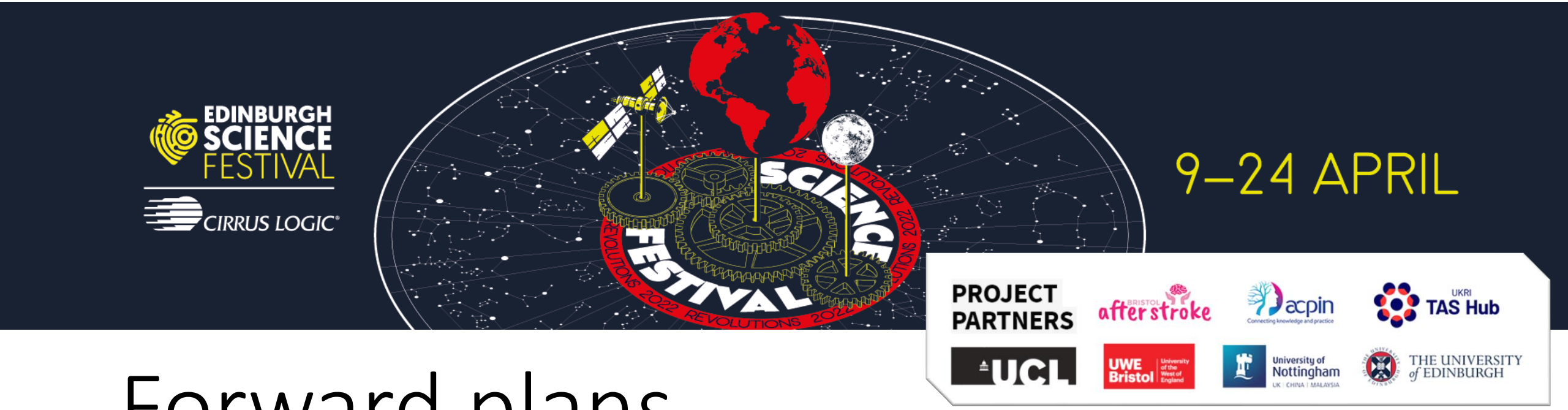
- Will the technology actually solve today's problems?
- Is the technology cost-effective? (value for money, empowered procurement)
- Who does set-up, repair, safety assurance? What skills?
- Who is the end-user? How usable is the technology by them?
- Where is the data, who is responsible?
- Is the infrastructure in place and capable of dealing with these additional interventions?
- How will existing care pathways change to accommodate new systems, practices and processes?



Siabhainn Russell, 2022: https://tas.ac.uk/seven-questions-to-answer-before-deploying-robots-in-health-and-care/ and work from Linda Sumpter et al (coming soon)

Future issues, today

- From *time on task* to outcomes (e.g. Cavendish report)
  - E.g. Strength based / wellbeing approaches
  - What role do robotics systems have here
- Wider networks and infrastructures
  - Thinking of robotic and data systems in care homes, domiciliary care, mental health and wellbeing and provision for people with learning disabilities
  - Do we need a broader view of what social care is? What role data and robotics?
- Funding issues: who pays?
  - Multiple overlapping crises, cuts in back end infrastructure vs new digital drives (is access & inclusion front and centre of these digital drives?) (will people have pay for their own salary?)
- We need data ethics that are situation-aware: values, context, complexity



Forward plans

1. **Scoping training needs** – working with partners and steering group
2. **Responsible innovation infrastructures report** – to discuss: how can TAS Hub / nodes help with follow up actions and project here

UKRI Trustworthy Autonomous Systems Hub

Progress towards principles and expectations of Equality, diversity and inclusion & responsible innovation

Contributing to research infrastructures for assistive robots

This project is about ***how we bake in*** accountability, safety, trustworthiness and responsibility to our care infrastructures

The lessons we're learning are applicable across UK digital transformation research and practice

We could do with your help…

Empowering future care workforces

The potential and practicalities of robotics in care

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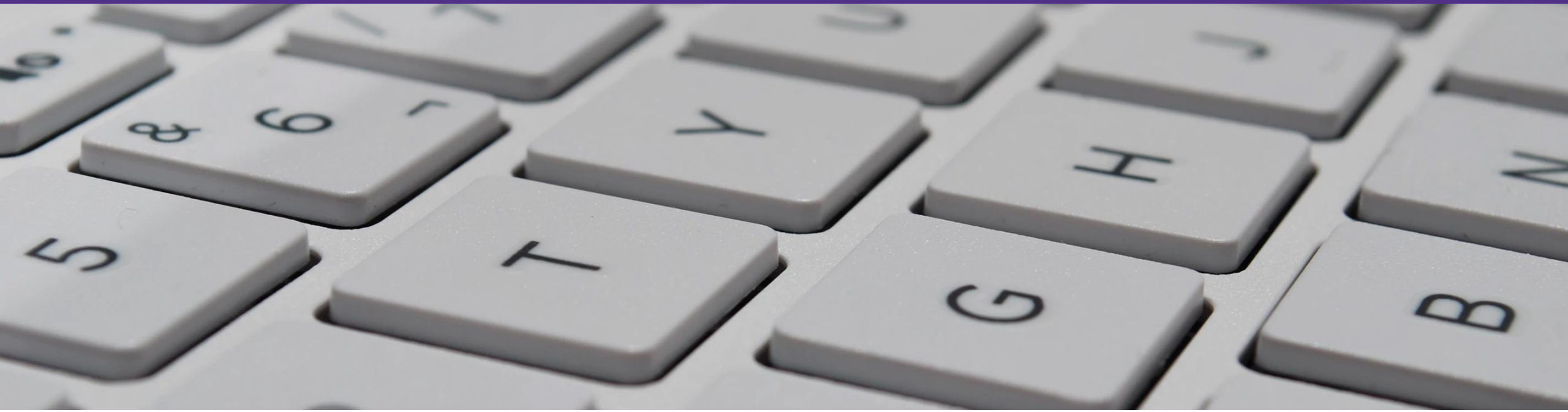
PROJECT PARTNERS

Question & Answer Session



Thank you

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