



# PARTNERING WITH AT COMPANIES AND INCLUDING USERS IN A USER CENTRED DESIGN ETHOS

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# Overview

- Use of AT with Complex Communication Needs (CCN)
- Abandonment of Assistive Technology
- Usability and User-centred Design (UCD)
- Case Studies
  - User Centred Design and Adults with CCN
  - User Centred Design and Children with CCN
- Working with Assistive Technology Companies
- Good Practice

# Technology and CCN

Need complex and varied support:

- **Mobility Aids** (e.g. Motorized wheelchairs)
- **Environmental controls** (e.g. switch to open/close door)
- **Educational aids**
- **Recreational supports**
- **Assistance in the workplace**
- **Communication aids** (e.g. Voice Output Communication Aids, letter/picture boards)



# Abandonment of Assistive Tech

- Assistive Technology has the potential to greatly enhance the lives of adults with complex disabilities and increase their independence

NLH Learning Disability Specialist Library. *Gadgets, Gizmos and Gaining Independence - Assistive Technology and people with learning disabilities: Advanced Housing and Support*,; 2006.

- Communication aids offer access to voice output and language support

**HOWEVER**

....the scale of abandonment of **AAC** is marked...  
conservative estimate 33%

Riemer-Reiss, M.L. and R. Wacker, *Factors Associated with Assistive Technology Discontinuance among Individuals with Disabilities*. *The Journal of Rehabilitation*, 2000. **66**.

# Abandonment of AAC

From a systematic literature review, top reasons include:

- lack of **training** for the end user
- lack of **flexibility** in adapting the system for the individual

Other reasons include:

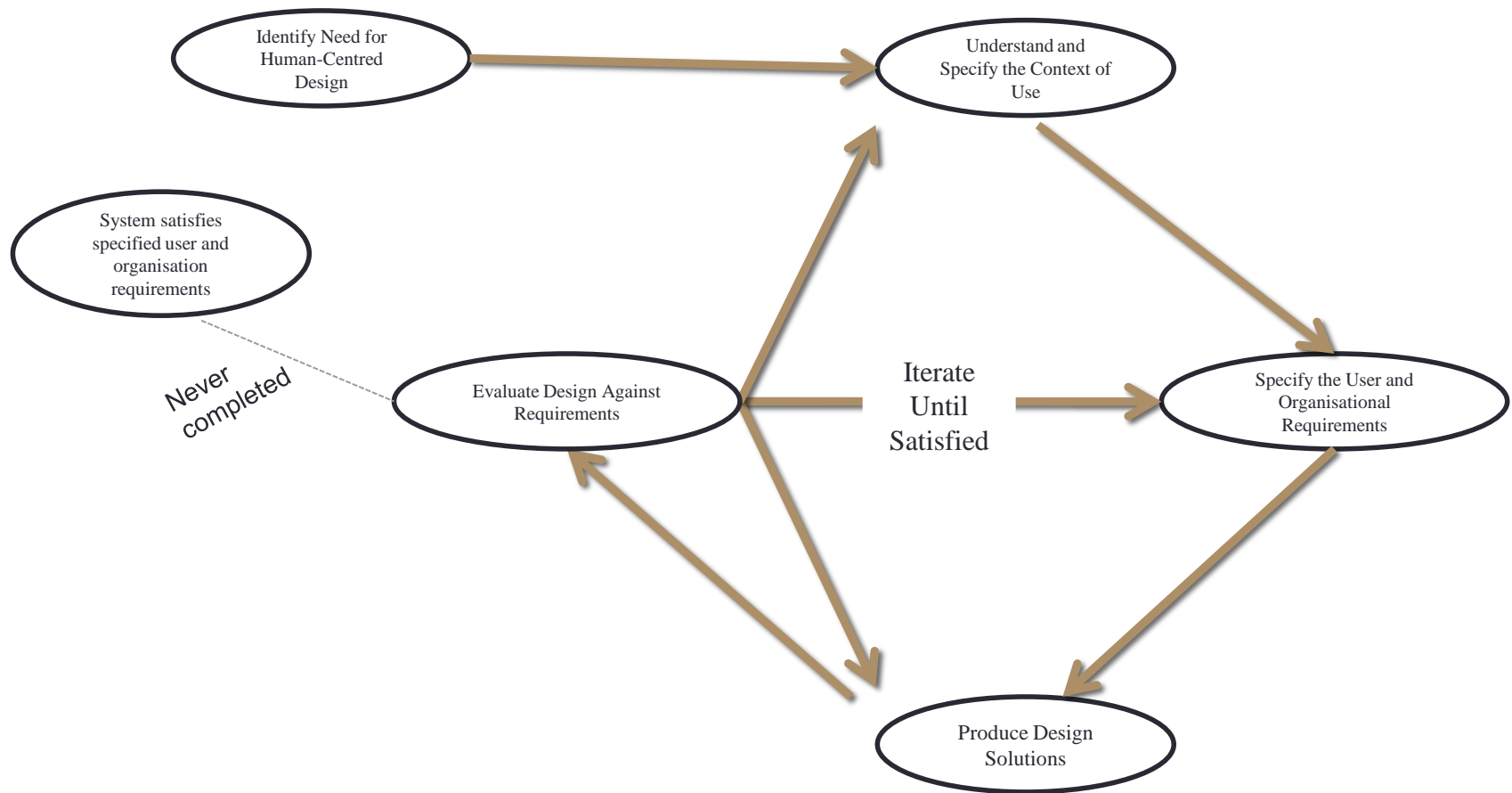
- consumer doesn't have **confidence** in their ability to use the system
- prohibitive **cost of learning** how to use the system

**REMINISCENT OF**  
Older People and IT

# Abandonment of IT for older people

- Reasons reported by older adult user group
  - lack of **training**
  - time take to **learn**
  - **lack of confidence** in accessing technology
  - time it took to complete a task
- However, with User Centred Design:
  - greater confidence in the technology
  - more willing to explore and experiment with the technology

# UCD - ISO 9241-210 (2010)



# User Centred Design and CCN

- Few studies has used people with CCN as active participants throughout the whole life cycle
- Literature cites possible problems:
  - ✘ Informed Consent
  - ✘ Unable to communicate thoughts
  - ✘ Payments may conflict with benefit rules
  - ✘ Specialised and unknown requirements
  - ✘ Different user groups may provide very conflicting requirements for a product
  - ✘ End user not the purchaser of end product

Newell, A.F. and P. Gregor, "User sensitive inclusive design"; in search of a new paradigm, in *Proceedings on the 2000 conference on Universal Usability*. 2000, ACM: Arlington, Virginia, United States.

# Case Study 1: Champion



# Ethics and Participants with CCN

- Adults with CCN may not be able to give informed consent using usual means;
- Need to ensure participants understand to what they are agreeing;
- Many participants have guardianship orders
  - Does not always specify research

Do you understand that your involvement in this project is voluntary?

Do you understand that you are free to withdraw from the study at any time?

Do you understand that you don't have to give a reason for stopping?

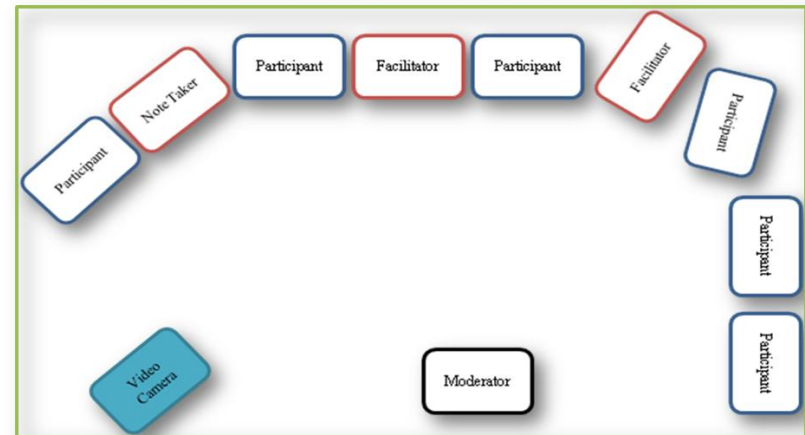
Do you understand that withdrawing will not affect your future medical care?

Do you agree to take part in this study?

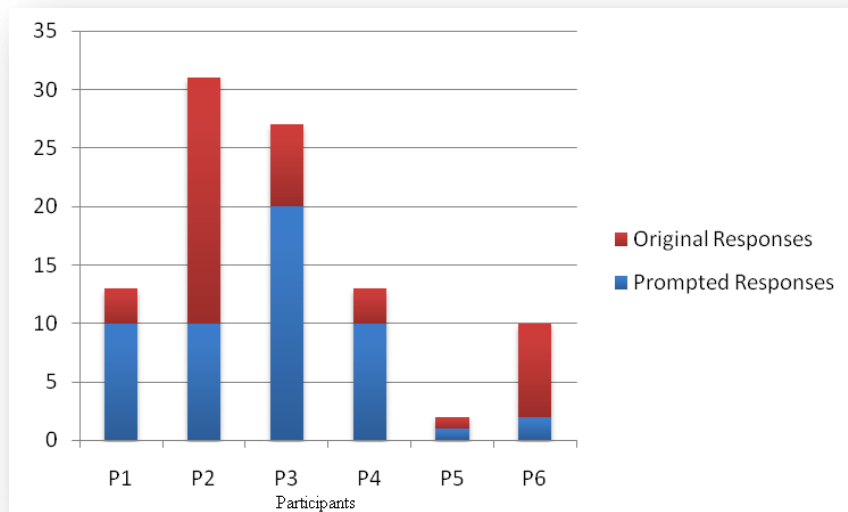
If ANY of the answers are 'no' or you don't want to take part don't continue with the form.

# Focus Group & CCN

- 6 Participants
  - 3 Female, 3 Male
  - Aged 25-55
- 60 minutes
- 3 questions
- 9 significant pieces of information for the requirements of the system provided



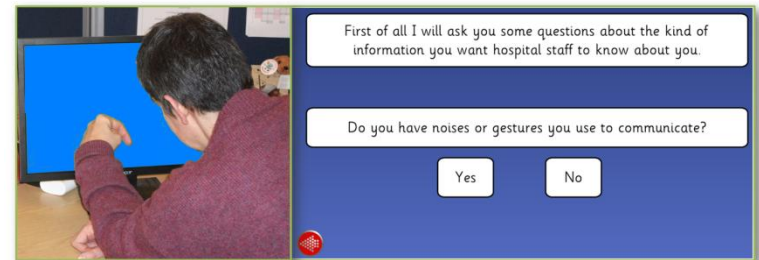
# Focus Group & CCN



- Initially hesitant in answering questions
  - Short Answers
- After 18 minutes
  - Direct engagement with each other
  - Moderator's input became limited
- 47% (n = 43) of the utterances by participants were unprompted

# Prototyping for Assistive Tech

- Paper mock ups of the user interface
  - Buttons, text boxes and menus made from foam
- Magnets attached
- Clicker5 mock ups from participants designs
  - Allowed different access options
  - Rapid alterations still possible



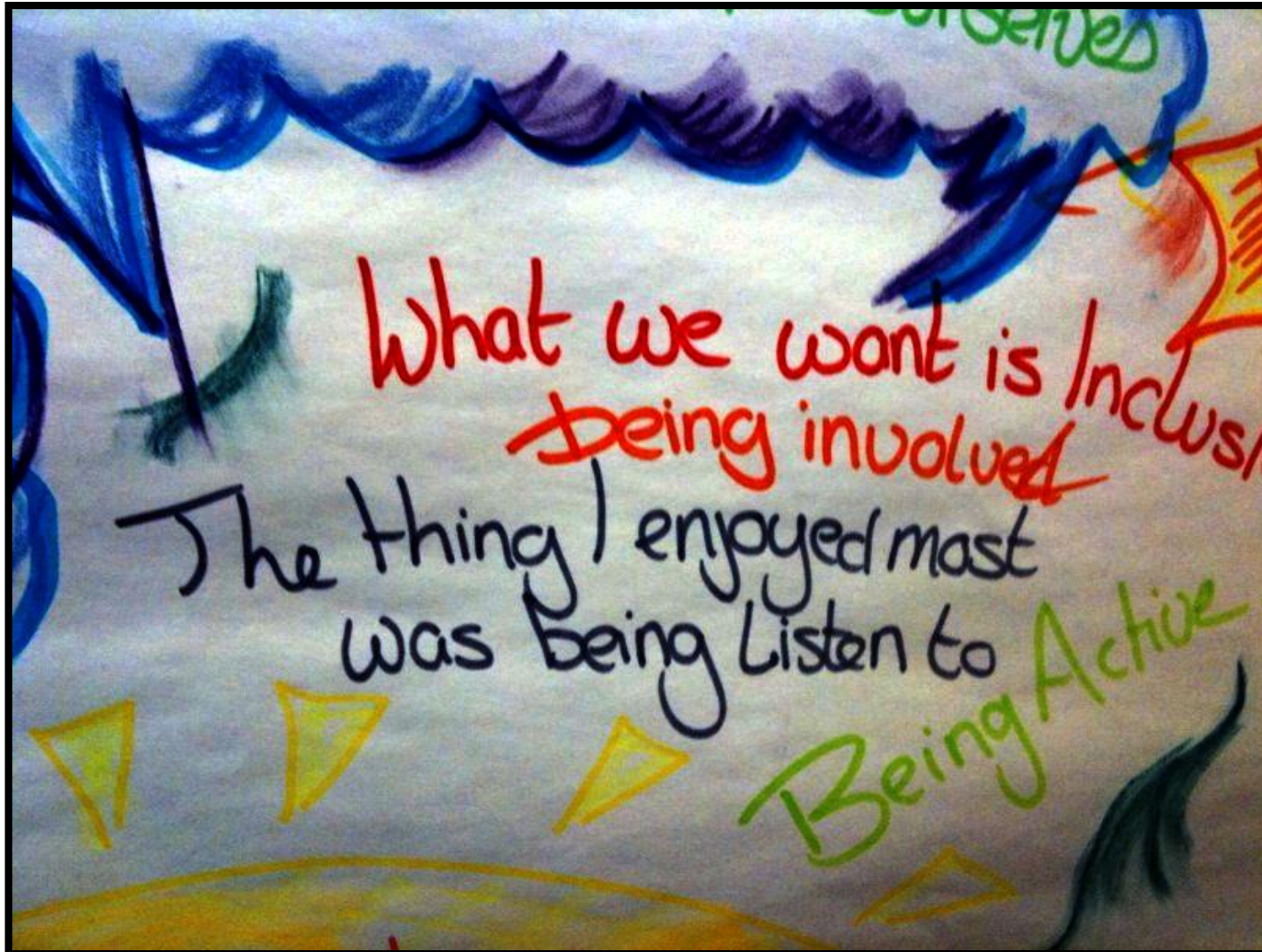
# Participants' Contributions

- Participants were able to discuss the different needs they had for the system
- 68% of features in software came as a result of participant suggestions
- Participants were confident in providing negative criticism
  - “It’s for kids!”
  - “I don’t understand the explanation”
  - “I don’t like the voice you used”

# Participants' Feedback



# Participants' Feedback

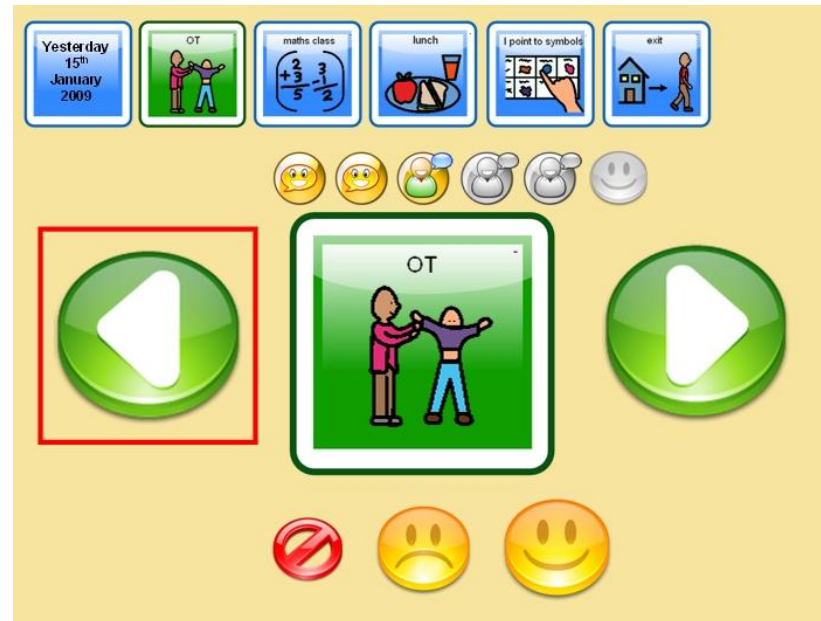


# Participants' Feedback

A photograph of a whiteboard with handwritten text in black marker. The text reads: ".)ts the way you should do it". The whiteboard has some colorful paint splatters in the background, including purple, red, and green. The text is written in a casual, cursive style.

.)ts the way you should do it

# Case Study 2: How was School Today



# Techniques for UCD with Children

- Consent: Children assent
- Design:
  - Ethnographic research
  - Prototyping as in Champion
  - Use of non-disabled children
- Evaluation
  - Staff at special schools are involved in the planning and execution of research tasks
- Feedback
  - Interviews
  - Talking Mats

# Additional Concerns When Working With Children

- Participating children were chosen in collaboration with staff
  - Any time spent away from educational or training activities for research needs to provide an equally educating and training alternative

# Working with AT Companies

- A main aim of any research should be to facilitate the transfer of results into products for the end consumer.
- Particularly true for niche markets such as AT and specifically AAC.
- Establishment of dedicated institutions such as ATCare who specialise on this transfer shows that there is a need to support the process from the beginning.

# Companies as Research Partners

- *Involving AT companies as early as possible*
  - Provision of Loan Equipment
  - Feedback
- *Choice of collaborator*
  - Intellectual Property is important hence working with more than one industrial collaborator might not be possible
  - Late changes of industrial partner likely to impose problems concerning the exchange of knowledge
- *Conflict with research funders*
  - Special care needs to be taken to comply with the research funder's policy.
  - In general research funding is not available if it is likely to mainly contribute to a single companies R&D budget.

# Benefits of Partnerships

- *Reciprocating benefits for research and industry*
  - Consumer feedback through industry
  - Participants' feedback from research
  - Can have a direct impact on the usability of the technology.
- *Access to research base*
  - Dedicated user groups

# Challenges

- Common language?
  - UCD ... Informer or evaluator?
- Developing a working relationship
  - Helps avoid misunderstandings and help good communication to exist between stakeholders.
- Real involvement takes careful planning
  - ensure that the environment in which the sessions is taking are suited to the tasks
  - choice of participants
  - NHS ethics.

# User Centred Design and CCN

- Issues raised at start:
  - ✓ Informed Consent
  - ✓ Unable to communicate thoughts
  - ✓ Payments may conflict with benefit rules
  - ✓ Specialised and unknown requirements
  - ✓ Different user groups may provide very conflicting requirements for a product
  - ? End user not the purchaser of end product

# Key Points

- People with CCN can engage in UCD
- UCD will improve usability which has the potential to reduce abandonment

# Acknowledgements

## ALL OUR PARTIPANTS and their families

### Dundee University AAC Research Team:

Rolf Black, Suzanne Prior, Ha Trinh, Rachel

Menzies

### Dundee University Collaborators:

Thilo Kroll, Nursing

Graham Pullin, Design

Eric Abel, Mechanical Engineering

### Tayside Orthopaedic Rehabilitation Technology Centre:

Geoff Bardsley, Jeremy Linskill, Victoria Johnson

Dundee and Perth Education Departments

Tayside Speech and Therapy Department

### Aberdeen University Computing Science:

Ehud Reiter, Nava Tintarev, Joe Reddington,  
Ross Turner, Graeme Ritchie

### Edinburgh University Computer Science:

Helen Pain, Rob Clark, Simon King

Nicola Grove, OpenStoryTellers Ltd, England

Tetsuya Hiroto, Shimane University, Japan

Sue Balandin, Molde College, Norway

Margareta Jennische, Uppsala University, Sweden

Dynavox Systems, Pittsburgh, USA



*Funded by:*

EPSRC, ESRC, Nuffield Foundation,  
Capability Scotland, SICSA

