Designing and Developing assistive devices to support ageing continence

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Design for living in later life 31st January 2013
“Do you know what I fear most about old age?”

“No what?”

“Incontinence!”
Why older people?

![Bar chart showing prevalence of any urinary incontinence by age and severity.]

**Fig. 4.** Prevalence of any urinary incontinence by age and severity.

What are continence difficulties?

- Over 70% of men and women over the age of 40 sometimes experience lower urinary tract symptoms (Coyne et al 2009)
What are continence difficulties?

• Over 70% of men and women over the age of 40 sometimes experience lower urinary tract symptoms (Coyne et al 2009)

• But even with perfect bowel and bladder control you can’t be continent if you can’t access toilet facilities!
Challenging environmental barriers to continence
What's the problem with toilets?
What's the problem with toilets?

“As far as I’m concerned it’s neither public nor convenient.”

Royal College of Art
helen hamlyn centre
TACT³
What's the problem with toilets?
What's the problem with toilets?
What's the problem with toilets?
Current Provision

UK public toilet facilities have declined dramatically over last 20 years.

From 15,000 to 5500

Also; design of facilities does not meet actual need
Current Toilet Innovations
What Older people say about toilets

Need better designed facilities

“If I’m desperate I will use the disabled toilet and it’s so much better. The grab rails really help and sometimes the toilet is higher. But I’m always worried that someone whose ‘worse off’ then me may want to use it”
What Older people say about toilets

“ I sometimes feel like a little animal, I always go the same way, follow the same path, as I know where the toilets are”

“I use to like to take the train to the next town as there’s a shop there I really like. But I don’t go there anymore, since they closed the loos on the train station”
What Older people say about toilets

“I lost my husband a few years ago, and I like to go over to the cemetery. But I can’t spend as much time there as I’d like as I need to use the lavatory, and the ones there are disgusting… I can’t use them… It upsets me a lot”.

Social theorists call this ‘the bladders leash’ where the lack of toilets restricts peoples freedom of movement and the amount of time they can be somewhere.
Research

- TOILET
- DOORS
- AREAS
- SINK
- GRAB RAILS
- BAGS
- FEET
- PUMP
- ARCHITECTURE
- TECHNOLOGY
- ATTRACT
- BUILDING
- RUNNING
- USER EXPERIENCE
- USER
- SENIOR
- LOCK
- FLOOR
- LIGHT
- ADJUSTABLE
- DESIGN
Judith, 60
Ex-councillor
Barnes, London
Enjoys the theatre
High blood pressure

Concerns:
Cleanliness
Public Transport
Evening Provision

“Look, the same as going into my toilet at home. There’s pot purée, there’s a lovely arrangement of silk flowers... If you treat people well then they behave much better.”

“Water tablets make you go a bit often. So when I come out for the day I don’t take mine. Tempting providence.”

“I don’t mind paying for a cleaner loo.”
Lives in town

Yasmin, 26

Irritable Bowel Syndrome

2 + 2 = 4

Trainee Teacher

You can look at a map of the town, it might tell you where the toilets are but it's not going to tell you what they're like.

Planning ahead

"It would just be a disaster for me if I went somewhere and they didn't have loos there ... I would just come home again"

Travels by car

Network of support

"I'm not brave enough to explain that I can't wait as long"

TOILETS

Signs

RADAR key
Crowdsourced iPhone App + Website

Showing 6 toilets in Borough of Wandsworth
- incomplete, unreliable & out of date

Wandsworth Council Data

Showing 56 toilets in Borough of Wandsworth
including Community Toilet Scheme
Assistive Technology

• Developing two assistive devices to help people cope with their continence needs
Smart Underwear wetness detector

- Why?

Sometimes it affects being with friends because you just don’t trust the pad and don’t want to leave a wet patch on their seat, so you tend to leave early so it spoils the time with them and they often don’t understand why you are leaving earlier than you should.

Getliffe et al 2007
Smart Underwear design
Underwear styles visual aids

Washable underwear with an absorbent gusset or pouch for a pad

Underwear Styles
Sensor design

Vibration sequence

0.5s

1.0s

30s
Smart Underwear
Clinical Study
“It gave me more confidence in doing everyday tasks.”

“Gave me more confidence, felt 'in control' knew that 'wet patches' would not happen. Overall felt happier.”

“It was very good in letting me know when wet.”

“Very useful, was able to change most of the time. It's a brilliant invention.”
“First time in years found comfortable product to assist with condition”

“Felt much more confident about going out without worrying that I was going to wet myself; it gave me more confidence in doing everyday tasks”.

“The smart underwear and sensor made me feel more confident as I had warning about leakage; incontinence is something that is embarrassing, this product gives you more confidence to lead a normal life”
Smart underwear design evaluation

The bar chart illustrates the percentage of participants' evaluations for various aspects of smart underwear design:

- **Appearance**: The majority of participants rated the appearance as Good, with a smaller percentage rating it as OK and Poor.
- **Size of unit**: There is a significant percentage of participants rating the size of the unit as Good, with a smaller percentage in the OK and Poor categories.
- **Position of unit**: The position of the unit is rated as Good by a large portion of participants, with a smaller percentage in the OK and Poor categories.
- **Comfort**: Comfort is rated as Good by a significant portion of participants, with a smaller percentage in the OK and Poor categories.
- **Ease of press studs**: A moderate percentage of participants rated the ease of press studs as Good, with a smaller percentage in the OK and Poor categories.
- **Reliability**: The reliability is rated as Good by a large portion of participants, with a smaller percentage in the OK and Poor categories.

The chart provides a clear overview of how participants evaluated the different aspects of smart underwear design, with a focus on the majority of positive feedback across all categories.
What Next?
Collaborators
Project Partners

Technology Sourcing

- cae - Centre for Accessible Environments
- ageUK - The new force combining Age Concern and Help the Aged
- R&RA - For Quality of Life of Older People in Care
- THE NATIONAL TRUST
- The Simon Foundation for Continence
- AGE Barnsley
- BTA - British Toilet Association
- Devices for Dignity