Overview
The development of a Friendly RestRoom
A user friendly restroom for elderly and persons with limited abilities

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In Europe alone, 14.9% of the population is faced with problems as a result of getting older; in 2040, this will be 23%.

Our research has shown that 54% of the target users have difficulties in using the rest room.

- injuries from falling
- balance problems
- support
- (un)dressing
- getting up
- hygiene
- sitting down
- reaching
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“Developing Friendly Rest Rooms for the elderly and the disabled people”
FRR Final Conference Vienna, 17th March 2005

QLRT-2001-00458
Past

We were so proud to have a toilet that we wanted it to be in our living room

‘Toilet in your living room’
Past

‘Family toilet’
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Present

‘Typical Dutch toilet’
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Future

‘Toileting in public’
Objectives of the FRR project

- Developing a user centered innovative smart toilet
- Development of a "FRR new knowledge base"
- Establishment of an independently operating consortium
- Publishing of project results in a book
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...started by the partners doing Research

At existing toilets (EPT) literature, patents, market...
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Interdisciplinary approach

Identifying types of users:

- Primary users
- Secondary users (assisting primary users)
- Architects & Builders
- Maintenance personnel
- Healthcare institutions
Behavioural studies in the Restroom
Computer Based Interviews

Female Users - Interview regarding body posture and cleaning habits

6. What means of cleaning do you prefer to use after defecating?

- [ ] towel or wet (toilet) paper
- [✓] dry (toilet) paper
- [ ] hand shower or bidet
- [ ] water from bottle or cup
- [ ] other
Anthropometrics and Ergonomics
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Problem analysis

“Mathilde”

Process Tree

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...which resulted in the first Concept Designs...
Four areas of use

Environment

Access
Transfer
Toilet

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Overview of the development of a Friendly RestRoom...which were developed into a Laboratory Prototype (APT) tested by users, after which Re-designs were made...
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Design sketches
Overview of the development of a Friendly RestRoom

...which were developed into a Bèta Prototype (BPT), tested again by users, leading to the Final Designs...
Building Bèta prototypes
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...which were developed into a Pre-production Prototype (PPT) which will be validated by the users once again.
The pre-production prototypes and FRR-container
Results

255 person tests, 316 toilet-sessions in Real Life Test

Knowledge about variations in human characteristics and behaviour in a toilet environment

Knowledge about the variation in product specifications and the effect on human behaviour

Pre-Production Prototype (RehaCare Fair Nov. 2004 Düsseldorf Germany)

1 patent request and 3 model protection requests

The FRR book to be published in 2005
Why a Friendly Restroom?

Because it will improve the Quality of Life for many elderly and disabled people in Europe.

Thank you!

www.frr-consortium.org