## The FRR Project - Creating an Assistive Toilet

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FRR ("Friendly Rest Room") is an EU project within the Quality of Life programme, which aims at making toilet facilities better suited for older people and people with disabilities. It also involves research to define user parameters for design and development [3], [4]. Many elements of the FRR (seat, grab bars, etc.) will be individually adjustable to meet the needs of persons with different functional limitations or disabilities, allowing them to gain greater autonomy, independence, self-esteem, dignity, safety, improved self-care and, therefore, enable them to enjoy a better quality of life. User-centred design (with primary and secondary users, relatives and rehabilitation professionals) has been incorporated in all stages of the project. An ethical peer review team monitors and supports the user-driven research and development process in an area of research that is sensitive and is lacking commonly agreed ethical guidelines [6]. In June 2004 about 40 older persons and persons with disabilities tested the 4th prototype generation in Sweden, Greece and Austria [4].

How could FRR support people with dementia?

- (1) The FRR room will be designed (especially regarding colour contrast, illumination) in a way that provides additional orientation for the user. State of the art technology (such as contactless smart cards for user identification, voice control) will be available but hidden so that the basic appearance of the toilet and the way of using it will be familiar for the user.
- (2) The current FRR prototype in Vienna provides a simple prompting functionality. Prompting means that the toilet system is able to produce messages in synthetic speech at certain moments during the procedure of using the toilet. This spoken information refers to the step that has just been taken as well as the step that will follow. Secondary users and literature [5] suggest that prompting might increase the autonomy of persons with dementia with regard to toileting. Direct involvement of persons with dementia will not be feasible within the FRR project. However, it is planned that the prompting mechanism of the Viennese FRR prototype will be improved and demonstrated to carers of persons with dementia and experts in dementia research.

**Acknowledgement:** FRR is partially funded 2002-2005 by the European Commission as project QLRT-2001-00458 in the Quality of Life programme. Project partners are: Industrial Design Engineering - Delft Univ. of Technology (NL), fortec - Vienna Univ. of Technology (AT), Certec - Dep. of Rehabilitation Engineering, Lund Univ. (SE), EURAG - European Federation of the Elderly (AT), Laboratory of Health Informatics – Univ. of Athens (GR), Applied Computing – Dundee Univ. (UK), Landmark Design Holding (NL), Clean Solution Kft (HU), SIVA (IT), HAGG – Hellenic Association of Gerontology and Geriatrics (GR).

## **References:**

- 1. Web address of the FRR consortium: http://www.frr-consortium.org
- 2. Manufacturing Partner of the FRR Consortium: Clean Solution Kft, Hungary, http://www.cstechnologie.com/
- 3. R. de Bruin, J. FM Molenbroek, T. Groothuizen, M. van Weeren: On the development of a friendly rest room, proceedings of the INCLUDE conference 2003, Inclusive Design for Society and Business, 2003
- 4. P. Panek, G. Edelmayer, C. Magnusson, P. Mayer, J. FM Molenbroek, H. Neveryd, R. Schlathau, and W. L. Zagler: Investigations to develop a fully adjustable intelligent toilet for supporting old people and persons with disabilities the Friendly Rest Room (FRR) Project, in: K. Miesenberger et al. (Eds.): ISBN: 3-540-22334-7, LCNS 3118, Springer, pp. 392-399, 2004.
- 5. Mihailidis, A. Barbenel, J.C., Fernie, G. (2004). The efficacy of an intelligent cognitive orthosis to facilitate hand washing by persons with moderate-to-severe dementia. Neuropsychological Rehabilitation, 14 (1/2), 135-171.
- 6. M. Rauhala, P. Topo: Independent living, technology and ethics. Technology and Disability 15(2003)205-214.
- 7. Kira, Alexander. The Bathroom, Viking Press, New York, 1976.
- 8. P. Gregor, A.F. Newell, M. Zajicek: Designing for Dynamic Diversity Interfaces for Older People, in ASSETS 2002, ACM ISBN 1-58113-464-9-02/07, pp 151-155

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