

P. PANEK, P. MAYER. **Applying ICT to ease the toilet usage.** *Gerontechnology* 2016;15(suppl):22s; doi:10.4017/gt.2016.15.s.928.00 **Purpose** Since its invention the Western 'sitting type' toilet has not seen many innovations<sup>1</sup>. This is remarkable as a significant number of older persons and persons with limited mobility face huge barriers with regards to the standard traditional toilets. Studies<sup>2</sup> have shown that a significant number (nearly 25%) of older persons' state that when using a toilet they are always afraid that something could happen to them (e.g. falling). More than 50% agreed that it applies at least to some extent that they avoid going out longer in order not to need to use (an inadequate) toilet. **Method** Usage of well-tailored ICT may help to reduce barriers and to empower older and disabled persons to fully participate in the society<sup>2,3</sup>. In this presentation the approach of the EU funded iToilet project will be outlined. iToilet intends to equip a height and tilt adjustable motorised toilet with useful ICT modules e.g. speech control, self-adaptation and emergency recognition. The project starts with elicitation of user needs, builds iterative prototypes and evaluates them in two tests sites in Hungary and in Austria. **Results & Discussion** The envisaged toilet system<sup>4</sup> will bring benefit (i) to primary end-users' dignity and independence, by its ability to enhance body stability when sitting on the toilet (individually adjustable optimum height, hands are free for handles), by supporting the sitting down and standing up process (dynamic adaptation of tilt and height, the current basic mechanism is shown in *Figure 1*), and by increased safety via emergency detection; (ii) to secondary users/care persons, for which the burden on their shoulders when assisting the end user will be reduced when support is provided by the toilet itself; and (iii) to care institutions, because the toilet will not only enhance the care service offered to the clients but also will enhance health and well-being of the employees by reduced physical demands during personal assistance provision (e.g. transfer wheelchair / toilet). The overall goal is the support of independently living persons to live an active and self-determined life at home. Currently (mid 2016) the specifications for iToilet prototype 1 are being fixed along the documented requirements. The specifications will guide the development of modules for prototype 1 which is planned to enter the evaluation stage beginning of 2017.

### References

1. Kira A. *The Bathroom*. New York: Viking Press; 1976
2. Molenbroek JFM, Mantas J, De Bruin R, editors. *A Friendly Rest Room: Developing toilets of the future for disabled and elderly people*. Amsterdam: IOS Press; 2011
3. Panek P, Edelmayer G, Magnusson C, Mayer P, Molenbroek JFM, Neveryd H, Schlathau R, Zagler WL. Investigations to Develop a Fully Adjustable Intelligent Toilet for Supporting Old People and Persons with Disabilities - The Friendly Rest Room (FRR) Project. LNCSC 2004;3118;392-399; doi:10.1007/978-3-540-27817-7\_58
4. <http://itoilet-project.eu>; retrieved April 1, 2016

**Keywords:** ADL, hygiene, toilet, AAL, smart home

**Address:** Institute for Design & Assessment of Technology, TU Wien, Vienna, Austria;

**E:** panek@fortec.tuwien.ac.at



*Figure 1. Toilet seat with mechanism to support sitting down and standing up*