

iToilet – An ICT-enhanced Toilet Supporting Active Life



What is iToilet about?

The iToilet research and development project addresses older persons who are living independently at home and the needs they have when using a toilet. The project aims at developing an ICT enhanced toilet system, which is able to empower older persons to live more independently and with increased dignity. iToilet also aims at reducing the workload of the care persons when providing personal assistance on the toilet.

Background and Motivation

Nowadays we are being increasingly supported by the provision of new and rapidly changing technologies that aim at making our day-to-day life easier. Surprisingly, there is one very common appliance which we use several times a day which has not changed since its invention: our toilet.

The most commonly used toilet in the western society is the “sitting type” toilet. Considering the diversity of human beings and the different needs and preferences in the area of personal hygiene, it is to emphasise that there are significant number of shortcomings of common standard toilets. These shortcomings can be very problematic and can represent huge barriers for older persons and persons with limited mobility.

Studies 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.

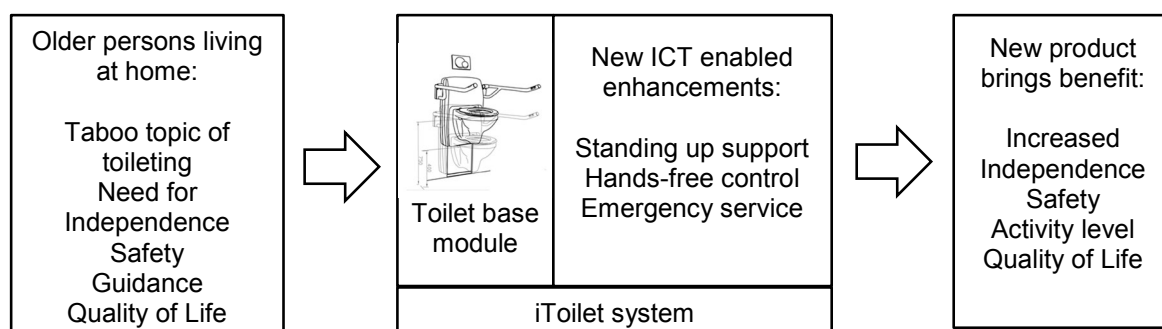
Aim

The iToilet proposal addresses these needs of older (or physically challenged) persons when using a toilet by envisioning a supportive ICT enhanced toilet adapting to the individual user needs of older end-users. The

project also addresses the needs of care persons when providing assistance to primary users in the toilet room.

Scope

An existing height and tilt adjustable toilet module serves as base for adding several significant enhancements and services, e.g. control via voice, automatic recognition of and adaptation to user preferences when entering the toilet room, recognition of potentially dangerous situations (e.g. a fall) and other functionalities (e.g. interface to care documentation, providing guidance to persons).



User Centred Approach

iToilet follows a strictly user centred approach and includes continuous ethical review and supervision. End-users are involved right from the beginning for eliciting user requirements and for participatory design activities. iToilet will iteratively evaluate prototypes with end-users in a laboratory and in the field.

Evaluation

The final prototype will be tested at 2 sites over a period of at least 4 months involving at least 25 primary and 5 – 7 secondary end-users on each field test site.

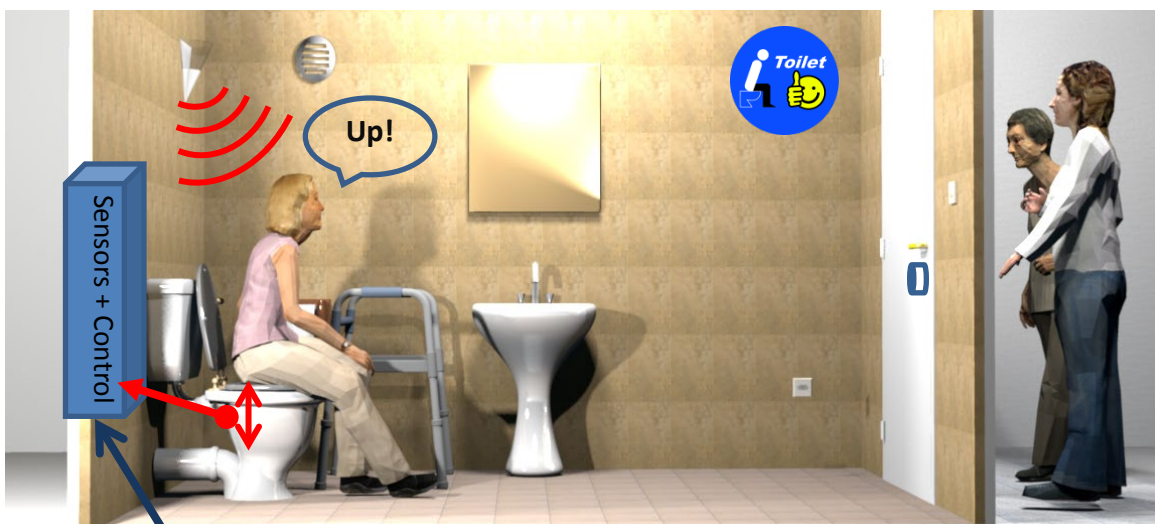
Expected benefits

The envisaged toilet system will bring benefit 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), and by increased safety via emergency detection.

- 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.
- 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).



Room with automatically adjustable and ICT enhanced itoilet

Care documentation + configuration



Nurses' room with care documentation

The business model aims at a modular product with scalability and customisation of the functionality and services according to the individual customer's needs and wishes.

iToilet Project Consortium



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