



Fraunhofer  
Institut  
Mikroelektronische  
Schaltungen und Systeme

## inBath – assistive bathroom surroundings at inHaus-Innovation- Center



**Fraunhofer-inHaus-Center** is the innovation workshop of Fraunhofer-Gesellschaft for SmartHomes and SmartBuildings. We develop application solutions for residential and real estate properties. Our main goal is to design solutions in order to be more efficient in planning, building, facility management and in various application processes. Our application laboratories for living, office, service, hotel and event management and health and care solutions in **inHaus1** (for residential purposes) and **inHaus2** (for real estates) connect research to the needs on the market. On an area of 750sqm, inHaus2 researchers develop innovative solutions, especially for healthcare.

The »**inBath**« project is especially oriented towards the support and development of hygiene-relevant care in a multigenerational household. With the help of new technologies, technical devices of aided recall are provided for the daily personal hygiene for elderly or disabled people. This does not only guarantee their personal autonomy but also enables them to live (longer) in their homes. The development of these systems, their testing and application are the core activities of the **inHaus** business field Health&Care.

For further information please visit us on the internet: [www.inhaus.de](http://www.inhaus.de).

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Fig. 1: CeBIT-Demonstrator „inBath“ (2009)

The observation and support of residents without disturbing them is the aim of the inBath project. The electronically equipped bathroom is liked by the whole family as it is barrier free and has a toilet that recognizes the residents automatically and adjusts its height accordingly.



Fig. 2: Multifunctional faucets: tap, soap and lotion dispenser all in one

The light is automatically switched on and off in order to save energy; so is the water tap. The only device that children do not approve of is the toothbrush alarm which reports whether the teeth have been brushed long enough.



Fig. 3: electric toothbrush

The bathroom is especially helpful e.g. for grandpa who is slightly disoriented after a stroke. He forgets to shave and take his medication regularly. A mirror over the sink assists him. Illuminated pictograms show what is to do next: wash yourself, brush your teeth, shave and comb your hair. The days for showering are also stored. If the resident has to take pills, a voice from a loudspeaker reminds him of it. Alternatively, the medicine cabinet can also “talk” to him. It will also be decently illuminated when the medication is supposed to be taken.



Fig. 5: Individual display of items on the mirror

“This custom-made assistance system is combined with the documentation of processes that happen in the bathroom”, says Dr. Gudrun Stockmanns, section leader of Health&Care Solutions at IMS. Sensors at the door, toilet, tap, light switches and carpet record every activity electronically. This is important if one day the

grandfather needs professional care. Doctors or nursing staff read on a computer screen which electronic nursing functions have



Fig. 4: Mirror with touch screen

been used, how often the elderly person has used the bath-room or the toilet and whether he fell down.

In emergency cases the computer automatically phones the nursing station or one of the persons whose details are stored on the hard disk.

*From: SmartLiving: Discreet assistance in intelligent bedrooms by Brigitte Rötthlein*