

ICT infrastructure for home automation supporting aging-in-place



RESEARCH SCHOOL
INTEGRAL DESIGN OF STRUCTURES

Speerpunt
BOUW

Subject

This research project investigates the concept of Ambient Assistive Living in relation to the state of the art of ICT for buildings, especially dwellings. The project combines knowledge about user needs in aging societies and new evolving technologies from the ICT domain applied to houses.

This project focuses on the ICT infrastructure of home automation (Figure 1). This is the technology that connects the components of the system (also called middleware). Since ICT infrastructure is a technical subject that has no direct relation with the end-user, user needs are rarely incorporated in the design of the technology. This causes mismatches between user needs and home automation performances.

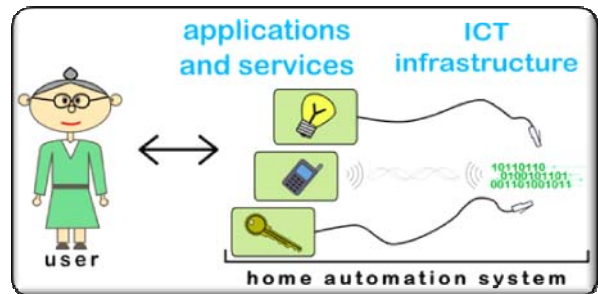


Fig. 1: : ICT infrastructure of home automation in relation with home automation applications and services, and the user



Fig. 2: Goal of the project: match user needs and the performance of the ICT infrastructure of home automation

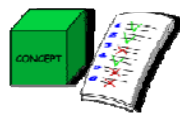
Goal

The goal of this PhD project is to match user needs and performances of the ICT infrastructure in home automation systems that support aging-in-place (Figure 2).

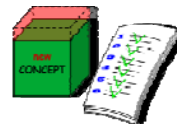
Determine criteria for ICT infrastructure based on user needs



Assess current concepts with determined criteria



Develop new concept based on best assessed concept



Test new concept



Expected Results

- criteria for home automation ICT infrastructures which meet user needs
- assessment of current ICT infrastructure concepts for home automation
- a new and validated ICT infrastructure concept meeting the determined criteria

3TU.

Researcher
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ICT infrastructure for home automation supporting aging-in-place



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Subject

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Goals

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Research Question

Do current ICT infrastructure concepts match the end-user needs, and on what criteria can this be determined?

Strategy

User needs regarding home automation are retrieved from literature and verified by experts. Based on collected user needs, criteria are defined that ICT infrastructures should meet in order to match user needs. Current ICT infrastructures concepts are to be assessed based on the found criteria.

A new ICT infrastructures concept is made by improving the best assessed concept. Only existing technologies are used in the new concept, such as software agents, peer-to-peer and Service Oriented Architecture (SOA).

The new concept is validated by implementing it in both a virtual simulation environment, as well as in a laboratory setting. The simulation environment is to be validated by the laboratory setting. Test results show whether the ICT infrastructure is meeting the determined criteria and would match user needs.

Expected Results

Criteria for home automation ICT infrastructures which meet user needs are an expected result from this project. Furthermore, a new ICT infrastructure concept meeting these criteria is proposed and validated.

Preferred Partners Applications / Sponsors

This PhD project is funded by PIT Foundation (Stichting Promotie Installatietechniek) and the BAM.

Prime Publication / Prototyping

Brink M, Jessurun AJ, Franchimon F, Bronswijk JEMH van. An open agent-based home automation system. *Gerontechnology* 2008;7(2):79; doi: 10.4017/gt.2008.07.02.016.00

Research Period

2009-2013