Assistive Automation (AA) for Independent Living

New approaches for assisting the independence of our senior citizens and people with disabilities are needed as our populations are ageing. New technologies can be used to attain this goal. Assistive Automation project evaluated home automation and home robotics technologies for assisting elderly and disabled people to allow them to live longer, safer and better in their own homes. A demonstration system was built to "Functional Home" demonstration apartment of City of Helsinki. (http://www.toimivakoti.fi, only in Finnish)

Contents

An assistive home automation system was built consisting of a home server, home networks and individual sensors and equipment. The system was connected to outside world using the Internet and the telephone system, thus enabling services to be brought to homes. A home robot was of the system. The robot sent surveillance video and images, and worked as a real "mobile" phone (video phone), and displayed messages and warnings on the display.

The study was divided into stages. 1) Home robot research, 2) home automation research and 3) study of the needs of the elderly people and finally 4) building of the demonstration system at "Toimiva koti", the Functional Home information center.

Results:

Home robot development was carried out in the fields of robot system development, robot command language, robot localization and user interface development. A new version of a home server called "Keeper" was also implemented. Successful demonstrations of video communications and remote control were performed.

There is a clear need of standards for connecting different home devices to work together and share same resources at home and outside the home such as: user interfaces, servers, wired and wireless communication networks, internet connections and systems for remote diagnostics. Home robots are not yet practical helpers for senior citizens. However, in very near future the supporting technologies for home robotics (batteries, wireless communications, compact computing power and home automation) have developed into a level, where practical commercial home robots can be built.

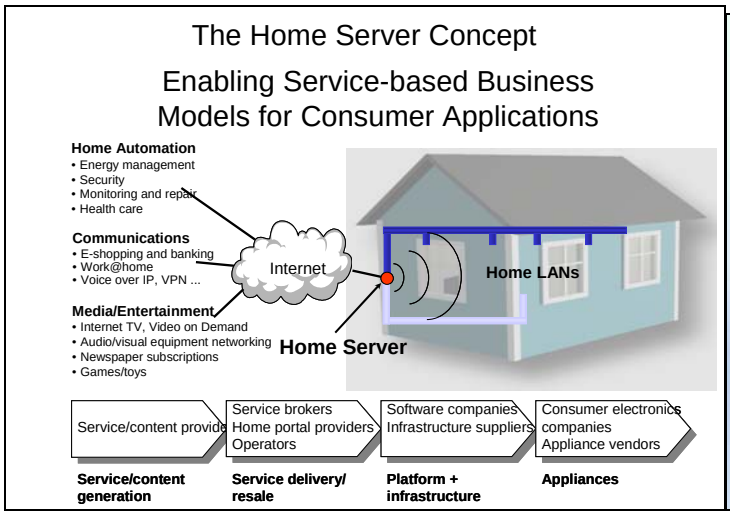

Figure 1. Assistive home automation requires cooperation between many partners.is. Figure 2. A spherical home robot can be a part of a home assistive system.

Panu Harmo / Helsinki University of Technology / Automation technology laboratory / Espoo / Finland / panu.harmo@hut.f i / http://www.automation.hut.fi/tsa/aut/ / +358 50 4513313 / mobile +358 50 3316803