

Housing LIN intro factsheet

SMART HOME – A DEFINITION

Introduction and acknowledgements

The concept of Smart Homes plays an important role in the planning of future housing-based models of care. Smart Homes and assistive technology are already the subjects of papers and events organised or sponsored by the Change Agents Team.

The research project carried out by Intertek for the Department of Trade and Industry, **DTI Smart Homes Project**, offers such a clear definition of a Smart Home with all its attributes, that the Housing LIN has sought permission to make it available to its members.

We thank the DTI and Intertek for their authorisation.

Housing Learning & Improvement Network
Housinglin@e-a-c.demon.co.uk
September 2003

If you would like to contribute or comment on the Smart Homes research or definition, please contact by 31st December 2003

Nicola King
Researcher
Intertek Research & Testing Centre
Davy Avenue
Knowlhill
Milton Keynes
MK5 8NL
Phone: 01908 857 733
Email: nicola.king@intertek-rtc.com
Web: <http://www.its-rtc.com>

What is a Smart Home?

Definition:

“A dwelling incorporating a communications network that connects the key electrical appliances and services, and allows them to be remotely controlled, monitored or accessed.”

Remotely in this context can mean both within the dwelling and from outside the dwelling.

Elements of a Smart Home

Three things a home needs to make it smart:

1. Internal network – wire, cable, wireless
2. Intelligent control – gateway to manage the systems
3. Home automation – products within the homes and links to services and systems outside the home

Installation methods

1. Retrofit to existing property
2. New build properties with basic systems as standards, additional systems added at owners' request
3. Converted properties: barns, warehouses etc, tailored to buyers requirements

Appliances and services – six main areas

1. Environmental (heating/water, lighting, energy management, metering)
2. Security (alarms, motions detectors, environmental detectors)
3. Home entertainment (audio visual, Internet)
4. Domestic appliances (cooking, cleaning, maintenance alerts)
5. Information and communication (phone, Internet)
6. Health (telecare, home assistance)

1.1 Environmental technology – heating and water

1. Heating, ventilation and air conditioning programmable for daily activities with remote control via phone/Internet
2. Water temperature control on taps, baths and sinks
3. Water quantity delivery controlled and monitored
4. Hands-free taps and toilets
5. Water leak monitoring

1.2 Environmental technology – lighting

1. Lights programmable for daily routines, special settings for watching TV and other activities
2. Lights come on to guide residents to bathroom or kitchen if they get out of bed at night
3. “In when you’re out” setting
4. Voice controlled lighting
5. Automatic curtain/window closing depending on light/weather conditions

1.3 Environmental technology – energy management

1. Running appliances when energy is cheapest
2. Running own wind generator when grid electricity is most expensive
3. Controlling use of air conditioning/heating for maximum efficiency when house is busy or empty
4. External control of heating by phone or Internet to override programmed system

1.4 Environmental technology – metering

1. Automatic gas, electricity and water metering, no more estimated bills, no more dodgy callers
2. Information available on a daily basis, not every 3 months
3. Online utility account management via PC (Internet) or TV (interactive service)
4. Energy use and running cost of each appliance available to help you use them economically

2.1 Security – alarms and access control

1. Alerts delivered to householder via phone or Internet, automatic calling of security services
2. Video (CCTV) of all vulnerable areas
3. Window breakage alarms
4. Entrance by dedicated swipe cards
5. Whole house deadlock when last person leaves
6. Bearbox for home delivery with single-use access control code

2.2 Security – motion detectors

1. To raise alarm if occupant fails to get up in the morning
2. To raise alert if occupant gets stuck in the bathroom
3. Fall monitors and alerts for elderly people
4. Video baby monitors with breathing detection for vulnerable infants

2.3 Security – environmental detectors

1. Fire/smoke detectors linked to fire service
2. Gas detectors to detect gas leaks linked to Transco
3. Carbon monoxide detectors to close down dangerous appliances
4. Water leak detection

3.1 Home entertainment – audio visual

1. Intelligent TV will learn family preferences
2. Remote control to record programmes via phone and Internet
3. Follow me TV will route programmes to screens throughout the house
4. TV and music available whenever wanted

3.2 Home entertainment – Internet

1. Online video games
2. Downloadable films on demand
3. Internet videophone for face to face contact
4. Internet access in all rooms for interactive services

4.1 Domestic appliances – cooking

1. Kitchen computer system
2. Online recipe suggestions with chef demonstration, ingredient ordered via Internet
3. Smart refrigerator – checks stock, orders automatically using Internet connection
4. Oven programmable to cook when you're out
5. Automatic breakfast – coffee, kettle & toaster

4.2 Domestic appliances – cleaning & maintenance

1. Robot vacuum cleaner to clean when you're out or asleep
2. Washing machine and dishwasher on pay-per-use service and upgradeable via Internet for new wash cycles
3. Washing machine detects stray items i.e. red socks in white load and prevents wash
4. Appliances constantly monitor performance, detect when components about to fail and trigger service call

5.1 Information and communication – phone and Internet

1. Phone access to control home settings – light, heat etc
2. Security alerts delivered to phone and PC via Internet
3. Broadband access allows information exchange from home systems to service suppliers – entertainment, domestic appliances, security etc
4. Home calendars for all family members, linked to school, club and work schedules

6.1 Health – telecare and home assistance

1. Occupant monitoring – falls, getting up on time
2. Medication reminders
3. Health monitoring – blood pressure, diabetes
4. Video entry phone linked to TV system
5. Height adjustable kitchen units and sink
6. Daily routine reminders

What next? – Future developments

All the systems described above have the potential to be incorporated in new Smart Homes during the next 5 year; indeed some are already available as stand-alone products.

The government is supporting the development of Smart Homes through the DTI's Next Wave Technologies & Markets programme.

Manufacturers are working on mass-market products that will form the hubs and gateways of the systems and also on the systems and services.

Smart Homes will be a reality very soon.

Nicola King, Intertek Research & Testing Centre