20.02.2004 (updated August 2004) **Factsheet no. 5**

Housing Learning & Improvement Network

Assistive Technology in Extra Care Housing

Assistive Technology can play a part in supporting people in extra care housing. This factsheet summarises the most common applications, gives examples and tells you where to get more details.

Prepared for the Housing Learning & Improvement Network by
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The Health and Social Care Change Agent Team (CAT) was created by the DoH to improve discharge from hospital and associated arrangements. The Housing LIN, a section of the CAT, is devoted to housing-based models of care.

DH Department of Health

Other Housing LIN publications available in this format:

Factsheet no.1: **Extra Care Housing - What is it?** *This factsheet gives essential basic information, explains the various forms extra care housing takes, and describes key ingredients and central principles (28.07.2003 updated August 2004)*

Factsheet no.2: **Commissioning and Funding Extra Care Housing** *Summary of essential facts about commissioning extra care and other housing based solutions for care. Most important facts about funding, what is involved, who is involved, who has to be involved and how long projects can take.(28.07.2003 updated August 2004)*

Factsheet no.3: **New Provisions for Older People with Learning Disabilities** *An introduction to the characteristics and needs of an emerging group to be provided for in developing new housing and services for older people. This includes extra care (23.12.2003 updated August 2004)*

Factsheet no.4: **Models of Extra Care Housing and Retirement Communities** *An explanation of the different types or retirement community and examples of how key decisions about the choice of model are made (04.01.2004 updated August 2004)*

Factsheet no.5: **Assistive Technology in Extra Care Housing** *AT can play a part in supporting people in extra care housing. Summary of the most common applications, with examples and where to get more details (20.02.2004 updated August 2004)*

Factsheet no.6: **Design Principles for Extra Care** *Basic information about key design principles and issues to consider when designing and developing a brief for a new Extra Care Scheme. Variety of models and ways of developing a range of different sites (26.07.2004)*

Factsheet no.7: **Private Sector Provision of Extra Care Housing** *The private sector has had an involvement in the provision of extra care housing for at leas 20 years. This factsheet is intended to help statutory authorities commissioning extra care housing and private developers work together with a better understanding (21.07.2004)*

Factsheet no.8: **User Involvement in Extra Care Housing** *The role of the users in the development and management of extra care schemes, linked to concepts of independence, self determination, control and choice, key themes in national policy (August 2004)*

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Assistive Technology in Extra Care Housing

Assistive technology can play a part in supporting people in extra care housing. This factsheet summarises the most common applications of assistive technology, gives examples and tells you where to get more details.

Contents **page**

Part One – Setting the Context

1. The Policy Context

Government policy, in tune with most practitioners and the aspirations of older people, is to support older people to live as independently as possible in their own homes.

This message runs through recent health, social care and housing policy statements. Some emphasise particular targets where Assistive Technology (AT) can clearly play a part such as prevention of falls in the *NHS National Service Framework for Older People*, or safety. Other policies refer to the potential for assistive technology generally to enhance "control, choice and independence" (*Valuing People* White Paper). One or two refer explicitly to funding, for example *Supporting People* makes clear Supporting People Grant can fund social care alarms.

From 2004, the Department of Health have announced a two year £80 m Prevention Fund which will enable local authorities to install smart alarm technologies in the home to support vulnerable people, helping up to 160,000 people to stay healthy, safe and independent in their own home.

Assistive technology can contribute to independent living, it can enable people with certain disabilities counteract isolation and sometimes give people greater privacy and dignity. All are policy objectives. In some instances it may prove better, more reliable and more economic than the human equivalent in completing certain tasks.

Taking an example from each of health, social care and housing:

i. The Health orientated *National Service Framework for Older People* (NSF) contains targets to reduce delayed discharge from hospital, to develop intermediate care, community equipment (including assistive technology), reduce falls, and generally enhance services which allow people to continue to live safely at home reducing admission to hospital and other more institutional forms of provision.
ii. Housing is represented by *Quality and Choice for Older Peoples Housing - A Strategic Framework*. This replicates much of the same philosophy saying "housing, care and support policies need to focus on enabling older people to live as part of the community in their own home….."
iii. *Modernising Social Services* give Social Services the same agenda. Social Services are required to report on a range of Performance Indicators which include measures of the number of people placed in residential care and those supported at home. Inspections of local authorities draw heavily on these kind of ratios expecting the latter to rise while those placed in care per 1000 of the older population fall.
iv. The NHS Improvement Plan*: Putting people at the heart of public services* states that evidence indicates that telecare can bring

substantial benefits in providing people with greater choice of care, assisting people to remain in their homes, reducing inappropriate admissions, facilitating discharge from hospital, and providing advance warning of deterioration in patient's condition (para 7.21)

2. The role of assistive technology – meeting diverse needs

Extra care housing is based on self-contained accommodation therefore any application of assistive technology that could be useful in someone's own home can be used in extra care. In addition extra care developments include a range of facilities and amenities that may be made safer, more useable or accessible by assistive technology. In public areas of buildings additional uses may be found or indeed be necessary such as CCTV, door openers, remote door entry system. Finally economies or better control may be possible through systems incorporated in buildings, in particular in relation to heating, ventilation and safety.

People in extra care housing will present a wide range of needs and aspirations. Assistive technology may have a relevance to many people given the knowledge of what is available. To give some examples which help form a framework for this factsheet:

- **Physical/sensory disability** may be limiting mobility, activity, ability to live independently, enjoyment of routine activities like cooking or entertaining. Some technology is designed to enable or overcome a physical or sensory limitation. This can be anything from an electric tin opener to a track and hoist system or even a fully automated house.
- **Social isolation** is one motive for moving into specialist communities. Communication orientated IT make it easy to keep in touch with others for example video phones or cameras linked to a computer
- Increased levels of **confusion or the onset of dementia** can be distressing for the individual and relatives or carers. A variety of devices have been developed that can prompt people, remind them to do things or how to do things automatically. This can be as simple as a verbal prompt to turn off the gas or close a door triggered by a sensor too complete instructions visually and spoken on how to cook a meal
- **Safety** at home is a priority for individuals, carers and is reflected in some of the policy described earlier. Social alarms have for a long time played a part in summoning help but have developed greatly so they can for example trigger an alarm when someone has a fall (fall detector), or if someone "wanders" beyond a certain defined area alert staff, act as an intruder alarm, monitor the taking of medication and so on…..

These are just four of many possible examples of the diversity of need that assistive technology can play a part in meeting. A number of other applications emerge through the factsheet.

Those thinking of the role Assistive Technology can play in extra care will find opportunities to improve services or make them more reliable or more

economic while meeting the policy (and older peoples own) agendas, limited only by imagination.

A useful guide taking forward assistive technology and telecare *Getting started with telecare* has been published by the Department of Health Integrating Community Equipment Services (ICES). See *Further sources of information*

3. Meeting particular needs

A checklist might include:

- Economies in managing the building and services
- Safety of residents and staff
- Enabling physically disabled residents
- Addressing sensory impairment
- Giving more privacy in providing intimate personal care
- Monitoring at night reducing staff numbers and giving greater privacy/less intrusion
- Reliable emergency response to a wider range of situations
- Allowing staff to physically assist very disabled people without conflicting with health and safety regulations
- Promoting a person-centred approach in delivering services to meet individuals wishes/needs
- Better use and management of staff, fewer “peak” demands to cope with
- Contribution to health care e.g. remote diagnosis
- Improving contact with relatives and friends, increasing contact
- Leisure activities, learning opportunities
- Combating effects of confusion and dementia

Part Two – Building a better understanding

Assistive technology (AT) can be challenging to deal with. Lack of technical understanding of how things work is made worse by language and terms used. An assumption that social care practitioners are familiar with AT and explanations are unnecessary may be understandably misplaced. We therefore start with some principles and practical points (or non-experts) which should help get a better grasp of assistive technology.

1. Definitions – what we are talking about

There are many **definitions** of assistive technology – as an example:

“Assistive technology is a product or system that enables independence of people with cognitive, physical or communication difficulties” (Adapted from Audit Commission)

The implication of this definition is that many very simple common aids like lever taps, grab rails and poles, electric can openers, walking frames, wheelchairs, telephones with large numbers, are all forms of assistive technology. There are said to be over 18,000 items of this type of equipment to aid independence. Occupational therapists and community equipment stores, Independent Living Centres are all sources of information. More narrowly assistive technology is used here to refer to electronic aids.

2. First generation – alarms and sensors

The origin of interest in assistive technology for older people was social **alarms** in sheltered housing schemes triggered by pulling a chord to summon help from a warden or neighbour. However, there have been important changes in recent years:

- Alarms can be linked to "call centres" usually "central control" despite Orwellian overtones, not just on-site wardens. Staff in the centre can immediately obtain details of the resident and take appropriate action which might be working through a list of people nearby calling staff, calling emergency services or simply talking to the person since the equipment now has very sensitive two-way speech facility
- Discrete **sensors** linked to operator at response centre
- **Dispersed alarms** were introduced. These are boxes that sit alongside a phone or incorporate a phone. They do everything a hard wired system could do (and usually much more) but simply need plugging into the mains and a phone line. They are relatively cheap – around £200 - £300. When triggered they can dial into a call centre (or call staff).
- **Wireless** communication became common place. This means dispersed alarms can be linked to an array of **sensors** – 20 or 30 typically without any wires. Sensors can monitor **the environment** e.g. heat, smoke, carbon monoxide or **the person** e.g. blood pressure, a fall.

The linking of individual sensors in this way is referred to as "second generation telecare".

3. Dispersed alarms

Dispersed alarms are now extremely versatile. They can for example:

- Monitor an array of passive infra-red and other sensor devices sending messages to the monitoring centre or care provider e.g. if someone leaves or enters the house after a certain time or does/does not do something being monitored
- Prompt the resident to do certain things via for example a pre-recorded message e.g. "Today is Thursday and you go to the Health Centre"

- Monitor the taking of medication via a pill dispenser and prompt the user to take the medicine, ultimately going on to alert the monitoring centre/ care provider if medication has been missed
- Sound an alarm and/or alert the call centre or individual via a pre-recorded message, if certain things happen or are not done, e.g. the front door is left open for more than a certain period or the hob on the cooker is left on or if there is no movement in a dwelling
- Alert the call centre and the carers if the person goes beyond a predefined distance from home e.g. past the corner shop, using a proximity alarm

4. Second generation – life style monitoring

The second generation of telecare is based on **life style monitoring** so systems "learn" what an individual's routine is and can act more "intelligently" as by linking a range of sensors the operators (or at least computer system) knows more and can trigger a more sensible response to changes detected.

Second generation telecare depends on:

- Greater use of computers
- Different types of sensors interlinked
    - activity
    - event
    - environment
    - utility
    - physiological

So to give a very simple example an intruder alarm does not need to be switched on/off as the system "knows" what the occupancy of the home is. The intruder alarm is automatically turned on when the resident leaves the house.

5. Why are we interested in assistive technology?

We are **interested in assistive technology for older and vulnerable people because** it can:

- Create a safer environment
- Enable – give more control/be controllable by the individual or by providing better information e.g. monitoring/prompting/devices for visual or hearing impairment
- Give greater freedom
- Assist independence
- Provide a means of social contact – sometimes
- Assist in privacy and dignity in some instances

Sometimes Assistive Technology can do a job better, more reliably than staff. It may also reduce the need for some staff and/or enable them to perform other housing, care and support tasks.

6. Sensors and Switches

We referred to **sensors**. It helps to understand that, stripped of all the computer and IT wizardry and jargon, at the heart of much assistive technology is simply a **switch -** they just come in many different forms. The switch turns something on or off. A "passive infra red detector" (PIR) is an invisible beam , if broken (i.e. switched) it can for example sound a burglar alarm, or in the case of a beam across an exit door in a flat occupied by someone with dementia, alert staff to the person leaving.

Alternatively, a sensor which measures light can switch on a motor at dusk to close the curtains, a thermostat measures temperature and can operate the central heating. Switching is either **active**, a resident presses a button to summon help or **passive**, a heat sensor detects the person has left on the hob and is getting too hot and switches the hob off without any action by the resident.

Switching

At the heart of user control is the type of switching specified. The possibilities are numerous:

- Air pressure
- Pressure mats – stepping on a mat activates a switch e.g. getting out of bed or stepping on a front door mat can be detected
- Dome switches – these can be large, coloured, etc
- Bend and click
- Foot switch
- Sound
- Hand print
- Pull
- Breaking infra-red beam

7. SMART Homes, Telecare and Telemedicine – what is the difference?

You will come across the term **"SMART Homes", Telemedicine**, and **Telecare** and wonder what the difference is:

i. **SMART Homes** are properties which incorporate a communication network that connects the key electrical appliances and services and allows them to be controlled, monitored or accessed either by the occupant or from outside the building. Control can be through for example wires, infrared

or radio signals. What you are doing is linking all the devices to some central control system.

While television and Hi-Fi's, video are commonly already controllable remotely by handsets, a much wider range of equipment can be operated in just the same way. One simple way to do this is to use an "Intelli Socket" which replaces the mains socket the equipment is normally plugged into.

SMART Homes

There are six main areas 'SMART' Homes link:

AREA	EXAMPLE
Environment e.g. heating, lighting	Water temperature, light Comes on when get out of bed
Security e.g. alarms, detectors	Fire, smoke, gas, fall Entry phone linked to T.V
Home entertainment e.g. DVD/video, TV	Digital or Cable TV
Domestic appliances, e.g. washing, cooking	Smart fridge checks stock and orders via the internet. Washing machine automatically comes on late at night using cheaper electricity
Information and communication e.g. Phone, internet, health, telecare	Phone access to control equipment remotely. Medication reminders or prompts. Physiological state sent direct to a GP or consultant.

ii. **Telecare** can be part of "SMART" Homes. It is defined as "*care provided at a distance using information and communication technology*". (ICES Topic sheet: Telecare) The core telecare equipment package for safety and risk reduction available commercially, off the shelf, consists of:

- Dispersed alarm and telephone with a remote trigger – a pendant, brooch or wrist alarm

- Fall, flood, smoke, carbon monoxide, movement detector and a temperature sensor
- Alternate links to a call centre or on-site staff

Additional devices can be added based on individual needs such as:

- Bed/chair occupancy
- Pressure mats – which can be placed anywhere
- Fridge door open/close detector
- Front door open/close detector
- Life style monitoring
- Electronic prompts e.g. "*Here you remembered to take the red pills today*"
- Physiological monitoring e.g. body temperature, pulse rate and much more
- Video phones

iii. **Telemedicine** is the provision of **medical care** remotely by means of information and communication technology. The essence of telemedicine is that it allows monitoring of a person's physiological condition to take place from a GP or consultants office (or medical centre). In extra care it can consequently play a part in:

- More timely medical action or therapy
- It may give the individual greater control and understanding of their own condition thus enabling more self help
- Assist in recuperation, rehabilitation and earlier discharge from hospital

The key equipment is a physiological sensor, commonly incorporated in a wrist band, which sends data via the telephone to a central control centre or direct to a doctor.

Typical equipment monitors:

- Blood pressure
- Saturated oxygen level
- ECG
- Weight
- Skin temperature

8. Sources of equipment

There are a large number of **manufacturers** of apparently similar devices. It is not easy to know which is best. There are surprisingly few properly controlled, systematic, large scale evaluations of different assistive technology by independent assessors. For useful information, visit the websites of:

- Ricability
- Technology in Healthcare
- Foundation for Assistive Technology

Two practical tips:

- Think through how the device works – what exactly is it doing?
- Think through what the individual really requires to meet their needs and if possible test a particular manufacturers product with the intended user

One real practical difficulty at present is the absence of an organization that can provide a comprehensive range of equipment and manage the whole installation. There seems to be no “one stop shop”.

Thinking Through

1. A review of a large number of devices which purported to reduce hypothermia by HSP found they fell into two categories; those that monitored the environment – principally temperature and those that monitored the temperature (and other functions) of the person. Simple testing by Technology in Health care found that those that monitored the person would only warn of hypothermia when the body temperature was such that hypothermia had started. Given that one of the effects of hypothermia is diminished judgement and lethargy they could not be as effective as environmental monitors.
2. Fall detectors can be an extremely valuable device given the high profile/incidence of this risk, the fear of falling and the possibility of fatal consequences of falls going undetected for an extended period. One of the problems with early fall detectors was the number of false alarms – stooping down to pick something up might trigger an alarm. They are now much better. Fall detectors work in different ways but usually some combination of detecting – orientation i.e., vertical or horizontal angle, rate of change or tilt, sudden impact shock. An older person with dementia or learning disabilities who simply drops their trousers to go to the toilet will trigger some fall detectors!
3. An older person with epilepsy will exhibit different patterns of activity if they have seizures in bed at night. You need to find an alarm that detects the particular individual changes, also one that can be adjusted for sensitivity to avoid excessive false alarms.

9. Planning for individuals in extra care

It will be useful to provide a general range of devices in a new extra care scheme in both dwellings and communal areas but take to heart the philosophy of **seeking to meet each individual’s personal needs**, in the optimum way, that meets their wishes. Extra care housing because it is

based on individual dwellings lends itself to tailored solutions. This can contribute both to economic running (one size does not need to fit all), high quality care and satisfy most individual's wishes for independence, privacy and dignity.

Evaluation of Extra Care Devices

The London Boroughs of Ealing, Hammersmith and Fulham with Hammersmith Hospitals Trust collaborated on an evaluation of a sample of devices applicable to supporting independence:

Visual Communication.- seeing each other on a TV while speaking by phone
Bed monitors – electro – mechanical devices that detect when a person gets up
Fall detectors
Health monitors – looks like a wrist watch, monitors pulse, temperature, movement
Chair monitor – detects when someone leaves a chair
Electronic Tagging – a watch with a radio transmitter
Hip protectors – polypropylene shields worn

The project looked at how effective equipment was and cost relative to other ways of giving support. The audio visual system and bed monitors proved effective. Bed monitors were used by people with a history of falls, wandering or dementia. Staff concluded they enabled them to provide a more timely and effective response to potentially dangerous situations. The audio-visual equipment reduced feelings of isolation and increased social contact with relatives.

Fall detectors; chair monitors, electronic tagging and health monitors "showed promise". The health monitors produced many false alarms initially. Fall detectors also proved too sensitive and produced excessive false alarms. User feedback was positive. They reiterate our message above, " *Only some patients (user) will benefit from or accept new technology… each individual situation must be carefully assessed".*

Further details from Dr Frank Miskelly on F.Miskelly@ic.ac.uk

Telecare supporting frail elderly people at home: Opening doors for older people project (ODOP)

West Lothian Councils elderly services have become synonymous with rolling out innovative telecare. The ODOP project is a large scale example of telecare supporting relatively frail older people. There are two strands to the project:

i) Development of four new purpose built extra care

schemes to replace residential care homes

ii) Introduction of “SMART” home technology in residents existing homes

The first of the extra care schemes consist of 24 one bed cottages around a core building with a range of facilities accessed by both residents and the wider community. One of the cottages is used for assessment and respite or rehabilitation. The telecare consists of a basic package with the capability to have a range of additional sensors or devices added to match individual needs.

The basic package in this case is:

- A dispersed alarm capable of being linked to up to 35 sensors
- Personal alarm trigger – pendant, wrist, brooch
- Temperature extremes detector
- Smoke detector
- 2 flood detectors – kitchen and bathroom
- 2 movement detectors - Passive Infra-Red (PIR)
- Pullchord in bathroom
- Remote door opener
- Video door entry

Users felt more secure. The Council believes the extra care scheme with assistive technology has:

- Significantly reduced length of stay in care homes
- Prevented a number of hospital admissions
- Significantly contributed to a reduction in delayed discharges

Further details from Tunstall Group Ltd on 01977 661 234

Part Three - Applying Assistive Technology to extra care in practice

Assistive technology can be split into four interlocking elements when applied in an extra care setting:

- Property based technology
- Monitoring technology
- “SMART” technology
- Security and communication technology

1. Property based technology

It is possible to specify a platform of basic property based technology which can be built upon should the dependency of each individual occupier increase. Conversely facilitating the withdrawal of equipment upon re-letting or resale is important to avoid waste and to promote the independence of the new occupier.

The property based platform in extra care is a common basic installation to all properties whether for sale or for rent:

- An emergency call system, usually this will be a dispersed alarm unit
- An intruder alarm sensing movement within the unit using PIR's
- Flood detectors under washing machine and bath linked to automatic shut off valves
- Carbon monoxide sensor where individual gas boilers are provided
- Smoke detectors linked to the fire alarm system

Activation of any one of these will initiate a call to either a call centre or on-site staff. Equipment is programmed to identify the type of call and to prioritise calls on the emergency call system or the fire alarm system.

2. Monitoring Technology

As part of a re-appraisal of an individual care plan the addition of "bolt on" adaptations will allow carers and relatives increased awareness of the state of health and safety of the occupier and extend independence.

- By increasing the number of movement sensors the intruder alarm system can be used to detect a lack of movement thereby providing regular reassurance that all is well. For example, it could be programmed to run an emergency call if no movement is detected for more than say 1 hour allowing carers to call using the system to see if there is a problem.
- Movement monitors fitted to points of entry and exit alert carers to the fact that an occupier had left their home; dependent on the time of day and the outside temperature this could trigger an alarm or prompt staff action
- An alert call could be raised if an occupier gets out of bed at night but does not get back in within a specified time
- Web cams inside the dwelling can provide a visual reassurance both to carers and also to families, using the internet
- Pre-recorded messages by a close family member can be used to remind dementia sufferers of where they are and what they need to do if they are worried or confused
- Fall monitors alerting carers to incidents wherever they occur on the premises

This is not an exhaustive list but rather illustrative.

3. 'SMART' Home Technology

As explained there are a number of schemes using smart technology to overcome physical disabilities. In the case of an extra care scheme the issue may be overcoming the loss of function following a stroke or perhaps linked to

dementia. Using a television and a remote keyboard, equipment can be used for the following:

- Opening and closing curtains and windows
- Checking on who is at the door and then opening the door
- Running a bath including turning off the water supply when the bath is full
- Operating hoists and other equipment facilitating personal hygiene without carers present
- Turning on and off individual lights and pieces of domestic equipment like the radio and television
- Prompting dementia sufferers with messages about what to do next
- Pre-programmed lights to go on when the occupier sits up in bed or gets up to go to the toilet

Good practice would see all these adaptations facilitated through a care plan and can be based upon the original property platform. Most of these functions need an electric motor or sensor which in turn requires the availability of electric power through a well positioned socket outlet. Consideration of the number and location of socket outlets is crucial at the design stage to make this flexible provision of smart home technology a reality in any unit at any time.

Gloucester SMART home – dementia focus

This is one example of a "SMART" home demonstration. In this case a joint research and development project of an existing house between the Bath Institute of Medical Engineering (BIME), Housing 21 and Dementia Voice. Features include:

- Bath and basin water level monitor and water temperature limiter. Reminder when bath/basin full
- A wall mounted "locator" with pictures of various things like glasses, keys, walking stick that may be lost. Pushing a picture of them causes it to emit a sound so it can be found
- Cooker monitor to detect dangerous heat, smoke, gas situations
- Picture phone – instead of buttons there are pictures of people on the front
- Pressure sensor under bed leg when triggered at night by person leaving bed lights a path to the toilet. A reminder to go back to bed if it is still night.

Further details from Vanessa Gabey on 01285 659928 or BIME - see further sources of information.

4. Security and Communication Technology

In order to maximise safety and security in an extra care housing scheme e.g. against distraction burglary, security for the site and the individual dwellings has to be to a high standard and well publicised. Excellent security will also "add value" to sale/rental units. Amongst the measures appropriate is for designers to take advice from crime prevention experts and to build to "secured by design" standards.

From a technology perspective the following should be considered:

- CCTV linked to a security monitoring system, offering high quality video recording of sufficient quality to secure convictions
- Security cameras linked to the television can provide information as well as increased personal safety. Cameras are relatively cheap and can be positioned outside each front door so the occupier can identify a caller by tuning into a chosen channel on the television. Another use is to position cameras to show a range of views around the site and of the village centre, providing a T V picture of what is happening. In this way every occupier can be on the alert but also safe at home.
- Keyless door entry will present more of a challenge to intruders as well as being a very effective way of promoting independence for wheelchair users. Keyless locks provide an access card or infra red which can be used from a distance just like a car remote locking device. This could be used for all communal points of access and for any doors internally between publicly used space and residents space
- Technology can also be used in the management of the site and the buildings controlling lights, heating, ventilation and reporting equipment failure, thus reducing staff costs and contribute to efficient energy usage
- Contemporary expectations for entertainment at home demand a flexible approach to the provision of digital and analogue television signals and a choice of supplier via cable or satellite dependent on location
- Choice is also needed for telephone subscription allowing occupiers the same options as in ordinary housing
- The provision of broadband internet facilities will connect occupiers to the outside world even if they are housebound. There are also crucial links with tele-medicine for the future which can use internet technology for remote diagnosis and health care monitoring as explained above
- Demand for increased choice in services creates the need for more flexible charging facilities. In the future the service charge for an individual occupier could be different every week or month and payment will be by the electronic transfer of data. Billing systems similar to those used in hotels may be appropriate including a facility to read your own state of account from home, and to pay by direct debit

5. Installation and maintenance

The considerable array and diversity of products means it is likely maintenance contracts will have to be arranged with a range of manufacturers or their agents.

Installation is currently a problem in an extra care setting in that if a wide range of applications are built in it may be difficult (or impossible) to find a single supplier for all devices. The best solution may be to oppoint a specialist in assistive technology to oversee and co-ordinate the installation and ensure compatibility of products. At present there appear to be relatively few suitable organisations.

A second installation issues concerns cabling. Current advice at the time of construction should be sought as the progress of wireless and satellite based system is such that extensive built in cabling may soon become unnecessary. However, additional electrical and telephone sockets should be fitted for PC and internet access.

6. Funding Issues

Equipment or cabling built in will normally be part of the capital cost of the scheme to be funded alongside other capital expenditure. Portable devices present a variety of possibilities and opportunities including:

- Leasing or renting
- Purchase by user
- Purchase by either housing or care provider
- Purchase by commissioner

Some of the cost of social alarm may now be met through Supporting People Grant where this is receivable. Depending on the device and assessed needs of the individual:

- Social Services may fund as part of the care package
- Health may fund where it meets a health need
- Housing may fund as for example part of a Disabled Facilities Grant
- The individual may fund from their ordinary benefits, pension or own resources

Occasionally grants may be obtained and charitable donations/fundraising have been also used to equip some extra care housing schemes.

Summary – A checklist for extra care

Item	Essential	Desirable
Property based sensors	Smoke Gas Flood Burglar alarm	Electronic shut off valves for water and gas
Emergency alarm	Radio sensors Resident cancelling facility Local management and remote site back up	Facility to alert relatives in parallel
Personal sensors	Movement detection Fall monitors Bed sensors	Tele-medicine facilities
Smart Home	Strategic location of power points. Internet points and telephone sockets Supporting structure for hoists	One or two fully equipped units provided up-front for identified clients
CCTV	Cross site installation linked to monitoring facility or web cams in strategic locations	
Access	Keyless lock to communal doors	Extended to all doors
Internet	Narrowband Choice of Internet Service Provider	Broadband
Television	Develop and own infrastructure Terrestrial and cable or satellite Terrestrial to be at no extra cost to residents	A Scheme intranet
Telephone	External supplier choice for residents	Free internal call system resident to resident

Fire system	addressable system in main buildings to assist in fast identification of site of fire	Extend to all properties
Billing for services	Menu of services and charges, cashless system as much as practicable	Access to bill data
Building management	Heating, lighting, lifts, ventilation	Receive fault alarms remotely interrogate devices Remotely rectify faults
Environmental controls in dwellings		Building management package for lighting, music, heating etc (perhaps an option for sale properties)

Technology can never be a substitute for human contact and there is great value in staff being able to spend “quality time” with vulnerable residents. Technology can however reduce unwanted intrusion by carers and it can save staff time and money.

Technology will play a vital role in allowing residents to remain at home, helping to ensure personal safety, and providing cost effective care solutions.

Further Sources of Information

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Gann D, Barlow J & Venebles T, *Digital Futures: making homes smarter,* Chartered Institute of Housing and Joseph Rowntree Foundation 1999

Malcolm J Fisk. *Social Alarms in Telecare: Older People's Services in Transition,* The Policy Press.2003

Useful topic sheet "*Telecare"* downloadable from ICES website – address below.

Suppliers

Established suppliers include those listed below but this is not exhaustive. The Department of Health Housing LIN does not endorse any of these suppliers. The list is provided simply to provide practical help for members.

Tunstall	www.tunstallgroup.com
BT	www.bt.com/homemonitoring
Attendo	www.attendo.se
SRS Technology	www.srstechnology.co.uk
Jontek	www.jontek.com
Tynetec	www.tynetec.co.uk
Vivatec	www.vivatec.co.uk
Initial	www.iess.co.uk
Docobo	www.docobo.co.uk
Nestor	www.primecare.uk.net
Huntleigh Healthcare	www.huntleigh-healthcare.com
Cardionetics	www.cardionetics.com

www.abledata.com maintains an online catalogue of assistive technology.

Organisations able to provide detailed information, advice or evaluations include:

www.bath.ac.uk – Bath Institute of Medical Engineering
www.icesdoh.org/telecare – Assistive Technology Evaluation Programme
www.doh.gov.uk/SCG/ictolderpeopleapps.htm – the use of information and Communication Technology to Support Independent Living
www.dlf.org.uk – Disabled Living Foundation

www.rethinkinghousebuilding.org – SMART homes database
www.audit-commission.gov.uk – SMART homes database

www.audit-commission.gov.uk – has produced three reports on Assistive Technology
www.asap-uk.org – Association of Community Alarms
www.fastuk.org – Foundation for Assistive Technology
www.ricability.org.uk – published some limited comparative evaluations of products

Other Factsheets in this series: see back of cover page