Client Technical Services
Central Remedial Clinic

Guide to Environmental Control Systems

13/10/05

The following is a fairly general description of environmental controls, and methods of making a dwelling accessible for a broad range of people. Obviously the choice of controls and actuators will be dependent on an individual's particular needs and abilities, however, the illustrations should give a broad outline of the type of equipment available. There are four sections dealing with physical disabilities, visual impairment, hearing impairment and finally cognitive impairment.

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Part one: Physical Disabilities;

The aim of this section would be to make areas such as access, communication, comfort, safety and entertainment accessible to a wide range of people with mobility and/or dexterity impairments. The main focus of this document will be through use of automated technology.

The Front Door:
Many people will find that a motorised front door will be useful. This is especially the case if they are wheelchair users. Motorised doors also use electronic locking. Ambulant people may require electronic locking, but without the motorised door if, for example they have reduced dexterity or lack of strength in their arms, making it difficult to insert or turn a key.

Door motors can be set to close automatically after a specific period of time (depends on the user) or they can be opened and then closed as separate actions. They should be provided with battery backup in case of power outage. Good door motors should have safety features built in. These would included surge protection when manually used (pushing the door against the motor generates a surge of voltage which can burn out some non-protected motors), protection against fingers becoming trapped (usually the door will open when even slight resistance is met).

Door openers are usually (nearly always) linked to electronic locks (See below). They can be operated as normal with a standard key, from within by a wall switch or push button and remotely by Infrared remote, Radio remote (keyfob), Proximity card, Biometric sensor, Etc.

When contemplating installing or planning for a motor, the following is required;
220Volt power spur near the top of the door, Adequate room above the door, Solid enough head to attach motor.

Electronic Locking:
In conjunction with a motor, electronic locking is used. Occasionally electronic locking without a motor may be required. Generally speaking multipoint locking systems cannot be adapted for electronic locking. Provided the door itself is solid enough construction, Electronic bolts will be as secure as a traditional mortice lock. Electric release rim latches, such as used with simple "Yale" type locks are not secure enough, as the latch can be slipped easily with a piece of flexible plastic. There are electric rimlocks available where the lock itself opens, rather than the strike plate, these are more secure. Electronic locks are operated similarly to motors above. With motorised doors, the lock is automatically synchronised with the motor.

Methods of access / egress:


Intercom:

Many mobility impaired persons will require an intercom system in order to safely answer the front door without having to go to it. Going to the door may be (a) impossible or (b) difficult or slow causing danger transferring to a wheelchair or missing the caller due to the delay. Using CCTV in addition can enhance personal security when admitting visitors and may also provide verification that the visitor has actually left the house if they have been visiting a person in an inner room. There are a number of possibilities with intercom units depending on the dexterity of the user – if they have manual dexterity, then they might choose to use an intercom system connected to the phone in the house, then by using a cordless speakerphone, they can answer the door from anywhere in the house (Videx system). If they do not have dexterity or they are always in a static location in the house, then a hands free infrared remotely operated intercom will probably be required. Neither of these have video capability, so, if CCTV is required it can be separately run to the user's TV set. Integrated intercom/video units cannot be operated remotely and will require a button press on the unit, although this may be acceptable if it can be mounted within arm reach of a chair or bed in which the user is likely to be most of the time. When building a new house, it is worth installing 6-core twisted pair alarm type cable from the front door to possible internal points. This will facilitate later installation of most systems.

CCTV can be brought by wired or wireless transmission to the TV set. Both will require a power supply near the front door, and the wired system will require co-axial cable from the door location to the TV set. If there is not adequate lighting outside, cameras are available with their own infrared light source for night vision.

Internal Doors:

For most people it is impractical, from a cost and inconvenience to other family members point of view, to motorise internal doors. Other people in the house will tend to turn off motors to leave a door open and forget to switch them back on. They may leave bags or obstacles on the floor causing the door to continually keep trying to close, Etc. Users have generally found it more convenient to fit internal doors with a two way opening and light spring hinges. There are three main types of hinge; there is a very light gravity activated pivot hinge, a spring loaded pivot hinge set into the floor or finally standard double acting hinges such as would be seen on kitchen doors in a restaurant, Etc. Doors fitted with these should be fitted with Perspex or aluminium kick plates at around the height of the footplates of the user's wheelchair. This minimises damage to the door and provides a smoother, more frictionless action when pushing the door with the chair. Ambulant users who have diminished arm movement will not need the kickplates. [Check Fire regs re new build houses !!]
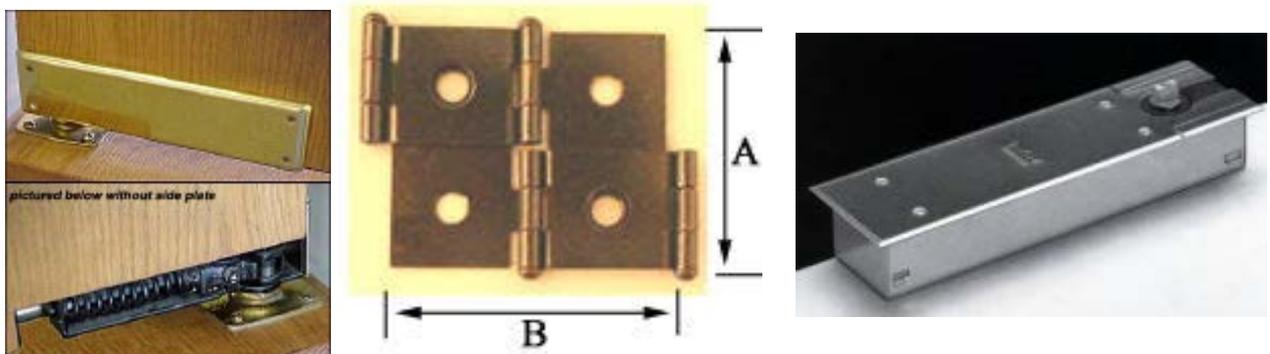
 Kickplate on door.

Lights:

Again, people with either a mobility or dexterity impairment may not be able to get to, reach or manipulate light switches. When retro-fitting, it may also be cheaper and easier to fit infrared, remote controlled light switches than lowering / repositioning existing switches with resultant replastering etc. Most normal *single* switches can be easily replaced with remotely operated ones. Double switches will have to be "Singled out". Also remote IR operated light switches are usually also dimmers and cannot be used on low energy or fluorescent lights. If building from new, then ask electrician to use single switches with a deep back box.

Another method of controlling lighting can be to use either "Touch Lamps" or standard lamps plugged into an infrared remotely controlled plug socket. Often it is difficult for a user to reach or manipulate the fiddly little switches normally associated with lamps.

Windows:
Users may decide to have a remotely operated window opening device. This is normally used for perhaps the user's bedroom and one or two rooms which the user occupies throughout the day. Most casement (ie hinged, not sliding) windows can be fitted with a window motor. This will open the window and close / lock it. These can be operated by a convenient wall switch (ie for other family members) and/or by infrared remote control. The most commonly used device is the Window Master, and is also available for Velux type roof windows.
220Volt power will need to be present in the form of either a socket or spur, located convenient to the window (usually hidden behind curtain folds).

Curtains:
Some specialist suppliers can fit remotely operated venetian and other blinds, however the most cost effective and readily available devices are for normal rail mounted curtains. These will not work on the "pole" mounted curtains, but are effective on standard track mounted curtains. They are operated by remote control and a wall switch beside the curtain. They operate off a standard plug socket, so for neatness, the socket should be located near the window, ideally behind the folds of the curtain. The usual motorised track is the Autoglide Remote.

Safety / Alerts:

Often within the house or room, a person may require a system to call or contact a carer or family member. There are a number of considerations to be taken into account, whether it is a local alert within the house, outside around garden or farm, farther still (ie carer lives more than a kilometre away), whether a bell or pager will suffice or is voice communication required. If voice channel is not required, then often within the house a simple wireless doorbell can be used. Depending on the user's ability this may or may not have to be adapted to take an external switch, although often the placement of a plastic rectangle affixed with Velcro can effectively turn the bell push into a sort of "plate switch". These are often used within the bathroom or generally throughout the house. They should be tried out for range before use, as thick walls may cause "blackspots" within the house. If a stronger signal is required, then a small paging system may be used, this should have a range of about a kilometre depending on local building density, and in open farmland may well have a much bigger range. If the carer is beyond the range of a pager, then a monitored call system should be used. This is connected to the phone line, and an alert is transmitted to a monitoring company who then call back the user, and if no answer or unsatisfactory response is received, they escalate the situation and call a list of supplied numbers (ie carer's mobile, Etc.). Occasionally, people may require a voice or sound channel. This is often the case with parents wanting to be able to listen in to their child's breathing, Etc. Frequently people use baby monitors for this purpose, however they are prone to interference. An alternative to this is to install a wired intercom system which could be adapted to be open one-way or two-way communication or even adapted to provide switch initiated communication for privacy.

Telephone:

There a number of issues around the use of telephones for people with reduced mobility or dexterity. If it is purely a mobility difficulty, then the use of cordless phones may eliminate the necessity to physically get to the phone when it rings, as the user can bring the phone around with them. If the user can press the buttons, but has difficulty lifting the weight of the handset, then there are cordless "speaker" phones which don't have to be held up to the ear. If a user doesn't have the dexterity to press buttons, then an infrared remotely operable speaker phone may be appropriate, although the user must be in the same room as the phone (so it is not portable like the cordless phones). Generally speaking, mobile phones are not that accessible as even the ones with "voice dialling" usually need at least one button press. There are also large button phones, amplified phones (both for hard of hearing, and also people with low volume speech) and picture phones for people with cognitive or memory difficulties.

Home Entertainment:

Many devices used for home entertainment require an amount of dexterity to manipulate them. Obviously items such as TV, Etc. are already remotely controlled, however, music systems and such can present a difficulty. It may be difficult or impossible to handle and insert tapes, CD's or DVD's. Tapes present a particular difficulty, as the most decks which will be available on music systems is two and these are not always remotely controllable. As a general rule of thumb when choosing a music system to play tapes, look out for small electronic touch buttons. Some units may have remote control for the radio & CD, but if they have the large mechanical buttons on the tape deck, then these will not be remotely operable. If in doubt, ask in the shop. Most audio books are now available on CD, so perhaps tape decks can be avoided altogether.

CD's and DVD's are difficult to manipulate. Disk changers can alleviate this problem by keeping a number of disks loaded in the machine. These range from small HiFi units with a 6 or 8 CD capacity, to larger, but still affordable changers with a capacity of about 300 CD's or DVD's. These units allow a user to have all their disks loaded in the machine, thereby eliminating the need to ever handle them again.

Sony DVP-CX875
Region-free DVD/CD
Changer"

Remote Controls:
Most users find themselves surrounded with remote controls, Satellite, video, DVD, Music, TV, control of Infrared home automation as above, Etc. Often these are difficult to operate if the user has reduced dexterity or reach. Also there may be difficulty if one of the many remotes falls down the side of the chair or on the floor, or has been unintentionally removed by a family member. There are a number of accessible remote controls available for use either manually (integrating all users remotes in one) or for use by people with reduced/no dexterity. The latter group of controls work by "switch scanning". This is where a light or group of lights on the control are activated by the user pressing a switch – this can be a button switch or even a small switch activated by a wiggle of an eyebrow. The light travels through the available options and when it gets to the desired action, the user activates the switch again and that action (window open, channel up, load CD, Etc.) happens.   There are a number of these controls available to suit most users. Choice will depend on (a) the user's ability to remember where signals are, (b) the user's ability to press buttons or not, (c) the number of items or signals which the user is likely to need. There also may be other factors which influence the selection of the control.

Senior Pilot, learning infra-red remote control. This control has a limited number of functions and so may suit someone who either does not want to control many items or may not be capable of remembering or learning the more complex type of controls. The control is activated by pressing large buttons or by switch scanning. The buttons are removable to insert pictures or graphics in them. The unit can be programmed to control any items from TV to telephone, Etc. This unit is suitable to users who want a "what you see is what you get" controller with capability to control basic TV functions, a few speed-dials on phone and perhaps a light or door.

Gewa Prog 3, learning infra-red remote control. This control can operate about 170 functions and like the pilot, may be operated either by direct button selection or by external switch scanning. The unit has an integrated keyguard to make button pressing easier. The large number of functions or signals are stored up to ten per button. This is achieved by means of dividing the unit's function into ten "pages" or "Levels" which are indicated by a row of lights across the front. For example, button 1 might change tv channel on "Level 1" but open a door on "Level 2". The user gradually learns the functionality of the unit by being introduced to it in stages (ie only one level available initially, then two levels, and so on). As it would be impossible to label every function on each button, the user must be supplied with a "Map" (see diagram). This unit is suitable to users who want a lot of functionality (ie free dialling of phone numbers, full TV & entertainment – video, Music system, teletext, doors, windows, curtains, lights, Etc.) and are capable of mastering the slightly abstract method of selection.

		LEVEL 1	(TV)			LEVEL 2	(Phone)				LEVEL 3		
	Door open / close		TV Off		Dymphna	Bridie	Mai						
	TV ON / Chan Up	Chan Down	Text on / off		Jane	Pauline	Bernie						
	Vol Up	Vol down	**What's on now**		Alice	C.A.S.A	9						
	Play VCR	Stop VCR	Fast fwd		*	0	#						
	Ans Phone ⬤ ◯	◯	◯ Fast R ◯		Ans Phone ◯ ⬤	◯	Auto Answ ◯ ◯		◯	◯	⬤	◯	◯
	Text News	Change level	**Text Next**				Change level						

		LEVEL 4	(Music)			LEVEL 5				LEVEL 6		
	Music on/off	Vol up	Vol down									
	Tape	Radio	CD									
	Rewind / track -	Stop	Forward / Track +									
	Ans Phone		Page turner									
	◯ ◯	Change level	⬤ ◯									

An example of a "Map" to the functions of the Gewa Prog 3.

SRS100, learning infrared controller. This controller has a small screen which displays icons or pictures of the items to be controlled. The controller operates on different levels, however, these are very transparent to use, for eg. If the user selects the picture of the telephone, they are brought into a "menu" of all the telephone functions, similarly, selecting say a picture of the livingroom might present a menu offering open/close door, open/close window, lamp on/off, Etc.. The system is therefore very simple to use, needing very little training or learning, whilst giving a huge range of functions to be controlled. The unit may be operated by direct selection – ie pressing buttons on the front, by remote switch scanning or by joystick control.

Voice controlled system. One example of a voice controlled system operates via a mix of infra-red and direct connection. It is a computer based system, and as such offers a more reliable recognition system than had previously been available on standalone units. The system recognises most voices, provided the user has reasonably clear speech. Commands are issued in ordinary English without the need to memorise exact commands (open the window in the kitchen OR open the kitchen window, Etc.). The system asks the user to confirm the command before executing (do you want to open the window in the kitchen ? [yes / no]). The system can operate the telephone directly from the computer and other items via infra-red or direct wired relays. Experience has shown, however, that voice control only suits a very small group of clients and has failed to provide a satisfactory solution for many people, leaving them with an extreme sense of frustration.

Tash "Mini Relax"

The Tash Mini relax is an entry level accessible TV remote. It is used with a single switch input and can be useful in particular for children who have not yet had the opportunity to have any independence. It can be beneficial from many points of view, as apart from the independent control of TV, it gives children the opportunity to interact more actively with other family members (ie they can fight over the channels !!), and it is also a very motivational method of teaching switch scanning, which is a skill which can be then used with communication aids, other more advanced environmental controls, driving a powered wheelchair, using a computer, Etc.


Mini relax with Auditory Scanning

Gewa Progress: A small programmable remote, accessed with switches. This unit is based on a PDA (handheld computer) and has a dynamic screen – ie if you choose the telephone icon, then the screen refreshes to display the telephone options. Similar idea to the SRS controller above, but much smaller, and in colour.

Switches / mounts

Where above controllers are required to be operated by switch, a suitable switch should be available along with some method of mounting it. The selection of the switch and positioning of it should only be carried out by suitably qualified personnel (ie. O.T. or AT advisor/evaluator). Most commercial suppliers are NOT qualified to make recommendations regarding switch selection and positioning. Some examples of switches follow.
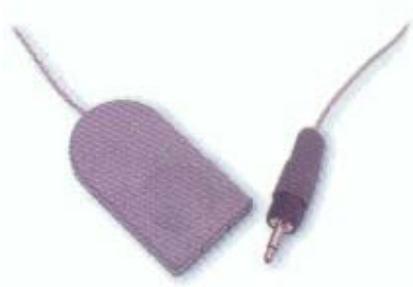
Often an easy and cost effective method of mounting switches and smaller lightweight devices can be had through use of a microphone stand with boom arm. These are useful to locate switches in difficult locations, such as over a bed or armchair, where there is often nothing convenient to clamp a standard mount on to. (Generally only cost about €40)

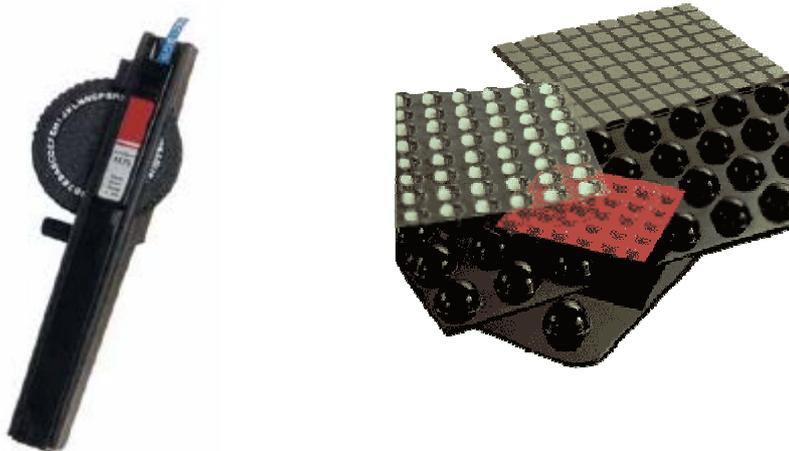## Part Two: Visual Impairment;

The aim of this section would be to make areas of daily living within (and indeed without) the home more accessible in general for persons with a visual impairment. The section is divided into paragraphs on Colour contrasts within the home and general signage both within an apartment and throughout a complex along with some examples of specific aids to daily living. These are very general guidelines and not specific to any one person. A dwelling solely for one individual should be customised to that individual's specific needs.

Colours and contrasts:

In general the décor of the home or apartment should be in matt finish to avoid glare. Avoid brilliant colours such as white, which could also result in excessive glare, often colours such as terracotta are used. Paint doorframes in a colour that contrasts to the walls and also doors in a colour that contrasts to the frames. Similarly, skirting boards should be painted in a contrasting colour (possibly the same as the doorframes). Doors themselves should also be in contrast to the colour of the handle.

Signage:

A Braille Dymo gun should be purchased in order to be able to produce various Braille sticky labels. These labels may be customised to the particular client, however general labels should be affixed to designate fridge and freezer, denote switches, cooker plates/knobs, washing machine temperature, identify any other items (ie tv control and video control). This signage should be continued throughout the complex, denoting room names (washroom, bathrooms, common rooms, offices, etc). Bump-ons (little stick-on rubber blobs) can be used in areas such as the washroom to denote the start positions of wash cycles, etc.

Aids to Daily Living:
Large button Telephone

Talking Clocks

Liquid level indicators   Speaking mobile (uses Symbian S/W)

Talking microwave oven

Talking calculator

These, along with many other aids for daily living are available from the National
Council for the Blind. www.ncbi.ie

Part Three: Hearing Impairment;

The aim of this section would be to make areas of daily living within (and indeed without) an apartment more accessible for a person with a hearing impairment. The section is divided into paragraphs on Safety and Aids for Daily Living.

Safety:

Prime concerns regarding safety centre around the inability of existing safety systems and procedures to effectively alert persons with hearing loss. Such people may not hear fire bells or other audible alerts, nor will they hear someone knocking on their door to let them know such a situation exists. Such safety systems should be accessible to everyone. Fire bells can be made accessible by linking them to appropriate alerts such as silent bell alerts. These might include light flashing (lights flicker on if off, off if on), vibration pads for under pillow at night, coupled with some mechanism of differentiating between alerts (for eg. a strobe light over the fire bell, or otherwise easily identified). Doorbells can similarly be made to react, however, again a method of identifying the nature of the alert will be needed. Vibrating Pagers are available to provide up to six different types of alert, ranging from door to fire/smoke alarm to telephone, Etc.

 Clofield Vibrating pager, with six identifiable alerts.

 An example of a Silent Bell Smoke alarm, there is a flashing light along with a vibrating pad for the pillow.

Aids for Daily Living:

Door Beacon, strobe light to detect knock on door. (easily affixed by Velcro for transient situations ie hotel room)
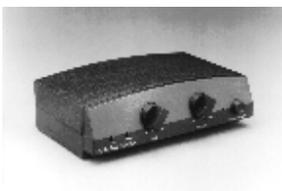
Vibrating alarm clock

Telephone amplifier, inductive coupler. Amplifies phone and enables hearing aid to pick up on "T" setting.

Teleflash, flashes when phone rings.

Home loop, used in standard livingroom to pick up sounds via microphone / TV and relay to hearing aid set to "T" via inductive loop.

These and many other useful devices can be sourced through the National Association for Deaf People. www.nadp.ie

Part Four: Cognitive Impairment;

The aim of this section is to illustrate some safety systems which are available to help people with cognitive impairment such as memory loss or dementia to lead a safer independent life in the home. The systems are by nature passive and do not require any training for the user, they often, however, benefit from the involvement of other occupants of the home or goodwill from neighbours.

Cooker Shutoff device: This device is linked to mains powered smoke, heat and gas (if applicable) alarms, and will if activated, shut down the power or gas supply to the cooker. The system will not restart until a key accessed switch is tripped. The decision as to whether the user resets or whether the key is held by family/ neighbour will depend on the nature of the clients impairment. Such systems normally give local alert, however, they can activate external bells, local radio paging, long distance monitored telephone alert. (New UK Manufacturer of these systems -   http://www.cat-technology.co.uk/)

Heat, smoke, gas detector cluster over cooker

Reset key switch

External Bell

Carbon monoxide detection:
In addition to above safety devices, it is also possible to install integrated carbon monoxide detectors. Standalone CO monitors are also readily available from electrical outlets.

General Fire Safety:
It is strongly recommended that all households should consider the installation of mains powered smoke alarms (minimum of two) with battery backup. All households should also acquire at least one fire extinguisher (dry powder is probably the best all-rounder as it will work on most fires – fat/oil, gas, electric, etc), and a fire blanket for the kitchen.

Care should be taken that doors are closed at night, and that people, particularly elderly or vulnerable people have a clear uncluttered escape route. Care should be taken that people are using safe stable ashtrays rather than using waste bins for cigarette ash (don't empty ashtray into a bin before going to bed, leave it till the morning or empty outside. Do not smoke in bed. Do not use plug adaptors (if necessary use long bar type multiblock with fuse). Unplug and switch off things before going to bed. Consider the use of oil filled radiators rather than electric-bar/open/gas fires if an elderly person requires extra heat.

Wandering and wayfinding: There are systems to detect where a client leaves the house where this would be inappropriate or dangerous for the client. These systems consist of magnetic contacts or pressure mats at/near hall door connected to local area (family) paging. The system, of course, does not restrict egress, but merely alerts a carer that the client has left. Similarly, for wayfinding (at night) lighting strips and passive infra-red light switches can assist and reduce the likelihood of a fall or disorientation around the house at night.

An example of a Passive IR Lightswitch with auto/manual and dawn to dusk operation.

Simple unobtrusive methods of creating an alert when someone approaches or exits a doorway can be had by installing some of the following low cost technology. (a) Where the design of the hallway allows (ie. a long corridor before reaching the door), a pressure mat can be installed under the carpet or mat. This can be used to trigger a pager unit such as the one shown above in the section on hearing impairment. There is little or no wiring necessary, as the pager is battery operated and the pressure mat does not need a power supply. (b) Where it is impractical to install a pressure mat (too wide hallway, would need mats all over the place !!) magnetic contacts may be attached to the doorframe and linked to the pager. Similarly there is almost no wiring required.


Magnetic contacts   Pressure Mat

Infrared light barriers ("beam break" systems) may be used in situations where the above two methods may not work (too large an area, no door, etc.). Examples of the application of these would be to alert a carer when the user wanders too close to for eg. the top of the stairs on a landing. Again, this could be linked to a pager or just sound a local buzzer, or trigger the switching on of lights.
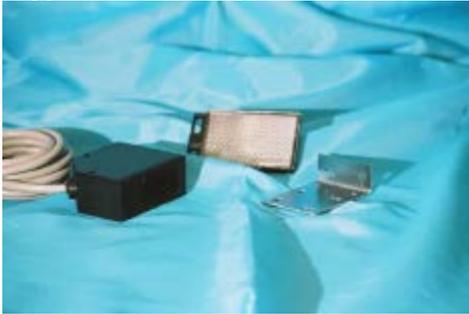
 Components of a beam break system.

In circumstances where the user lives on their own and therefore a local area pager as outlined above may not work, a monitored phone alert can be triggered by the mats, beams, contacts, etc. On triggering the alert, the phone automatically calls a monitoring station, who then pass on the alert to perhaps a carers mobile phone, etc. An example shown below incorporates a timer clock, so the system only causes an alert if triggered between for example 10:00pm and 07:00am. In other words, the carer is only alerted if the user goes out late at night.

ETHICS
The above systems, in no way restrict the movement of users, however they go some way towards peace of mind of the carer and alerting the carer that a potentially dangerous situation might arise, which in turn can benefit the user. There are always ethical considerations regarding the level of and purpose of monitoring a user's movement

within the house and the user, if unable to give consent or understand the purpose of the system, must have someone to advocate for their rights rather than have a system imposed on them without due consideration. Suggested reading on the topic of ethics is "**Technology, Ethics and Dementia**" by Sidsel Bjørneby, Päivi Topo, Tolhild Holthe. This can be ordered from the Norwegian Centre for Dementia Research.
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Bed Leaving Alarms
And Wandering Alerts

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Bed leaving / Fall prevention / wandering systems;

Areas of difficulty

Person at risk within home / institution of falling, fire hazard, confusion if they leave bed without carer knowing. The systems outlined below are designed to alert carer only and will not detect fall / fire / etc. There are proprietary monitoring and safety systems designed to do this.

Assessment;

To determine best system, the following questions need to be answered;

- Living alone   /   with carer   / Alone but carer within 1 kilometre.
- Shares room with carer / own room.
- Uses stairs / does not / stairs present / stairs not present.
- Leaving the building an issue / not an issue.
- Distance between carer's room and clients (aprox metres).
- Single bed occupancy / dual bed occupancy.
- Leaves bedroom door open / closed.
- Can get out one side of bed only / either side.
- Include brief sketch / description of activity (ie gets out of bed, leaves room, walks down stairs, goes to bathroom, etc.).
- How critical is the alert ? (ie lives alone, then strongly suggests a monitored system…)
- Level of client confusion.

The equipment;

(a) **Type of alert**.

    Local alerts

        Wireless doorbell, should be plug in type – battery ones last less than a week. Typical range 20 metres, depending on structure (thick walls / partition / etc.). Need to be tested, but will usually work in most domestic houses. Aprox cost €40. May need to be adapted to accept easier / more obvious button to trigger alert.

Shown from Maplins, Jervis St. Dn1 or Blanchardstown, Dublin 15, also often available in DIY stores.

Also, standard doorbells / buzzers can be used, with the connections to the push button being connected to the pressure mat, Etc. This solution may suit where the alert is not required to be moved from room to room.

Short range pager. Custom designed pager, portable & plugs into charger at night. Will work up to 500 metres or beyond, depending on structure. Aprox cost €350

Silent Alert – Deaftech / Clofield UK

Longer range pager. Will work with outdoor aerial up to 1 or 2 kilometres. Useful in rural / farm locations where distance is an issue. Aprox Cost €500

Scope Pager.

Monitored Care call type system; unlimited range as dials through to monitoring station (24/7) who then escalate as appropriate. Cost aprox €500 + annual charge of about €150

Local community alert, also known as "Social Alarms" (one shown has a clock fitted, so it only alerts response centre at night time)

Portable radio frequency nurse call system. Portable, radio operated nurse call which will cover up to 4 separate clients with the central unit located in nursing station. Useful to augment existing system or in residential units where nurse call system is not present or not adaptable. £250 STG

 Easylink UK

Type of actuators;

Type of actuators will depend on specific circumstances of client, typical examples are shown below. The assessment checklist above will give some indication of suitability. All the below systems are compatible with the alerts above, and can also be set to be deliberately activated by a client (ie as a home nurse-call, using a panic button or Key-fob)).

Pressure mats. Placed in series under rug / carpet. Need to cover all possible footprint areas, for eg around bed. Use of rugs can create additional falling hazard. Can be placed under carpet at top steps of stairs for eg. or in corridor to hall door. Useful in small areas where client can't avoid / miss them. Cheap - €5 each

Shown – Farnell (part no. 3509280), Radionics (part no 317-156 or 317-140 depending on size)

Pressure sensor. Under leg of bed / chair. Adjustable to calibrate for weight of client. Sense weight coming off bed/chair & trigger alert. Cost aprox £250 STG. Inc pager system.

Easiaids.com

Bed/chair leaving pressure mat system. Pressure mat under mattress. Time delay to avoid activation by normal movement in bed. Mats should be replaced periodically as constant flexion of mat causes malfunction (6 monthly ?).
Cost aprox £250 STG inc pager system.

 Easylinkuk.co.uk

Magnetic contacts on bedroom / any door. Use "Normally open" type of contact (alarm ones are "normally closed" circuit). Placed on door & Frame. Easy to fit, cheap. Need a transmitter for each door if using a pager (otherwise connected directly to the doorbell type systems), so cost increases with number of doors. Door must be left closed at night, opening then activates alert.   Cost aprox €10

Farnell (Part nos. 607-198 & 607-204)

Infra red beam break system. Units placed each side of doorway / stairway / area to be monitored. Passing through beam activates alert. May be switched off at plug socket (during day for eg.). Useful to monitor either bedroom door which is normally left ajar, or alert as someone moves across a hallway toward stairs, etc.. Aprox €80

Maplins, twin beam break.

Passive Infrared systems. AKA movement detectors. Used to switch on a light when someone enters a room (ie leaves bedroom, hall light comes on). Can occasionally be used to detect person sitting up in bed (ie intention to leave), but difficult to set up. Aprox €30

 PIR Socket – Maplins   Wall Socket – Maplins

Useful Numbers / Contacts for components.

CallCare monitored systems – www.callcare.ie   047 52375
Farnell   www.farnell.com 01 8645009
Radionics   www.radionics.ie 01-4153100
Maplins   www.maplin.co.uk 01 8782388 / 8215810
Easylink Uk - www.easylink.co.uk 0044 1536 744 788
Easiaids Uk   - www.easiaids.co.uk   0044 20 8763 0203
Deaftech   www.nadp.ie 01 8723800
Clofield Uk   www.silent-alert.co.uk 0044 800387397
The Alzheimers Store - http://alzstore.com/