

Assistive Technology: some lessons from the Netherlands

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A.Tinker, C.McCreddie, P.Lansley. Assistive Technology: some lessons from the Netherlands. Gerontechnology 2003;2(4): 332-337 The authors have just completed a study of assistive technology (AT) and how it can be introduced into the existing homes of older people. As part of this empirical study some collaboration with the Netherlands took place for two reasons. First to learn about the use of assistive technology from a country where its creative use was well established and second to learn how older people influence policy. Two Dutch consultants helped the team and a short visit was paid to Eindhoven. As a result of this collaboration new ways of using AT were found and comparisons made with the policy and legislative background. In addition lessons were drawn about the involvement of older people.

Keywords: assistive technology, housing, adaptations, older people, smart housing

The authors have just completed a study 'Introducing assistive technology into older people's existing homes: feasibility, acceptability, costs and outcomes'¹. As part of this empirical study some collaboration with the Netherlands took place for two reasons. The first was to learn about the use of assistive technology (AT) from a country where its creative use was apparently well established. Secondly it was to contribute to that part of the project 'capturing the experience of users' which was about involving older people. It was known that there was a well-organised network of older people in the Netherlands who were interested in assistive technology and gave advice to policy makers. Although this comparative study was limited, it proved valuable to be able to compare and contrast the UK with another country.

HOW THE COMPARISONS WERE MADE

The research team appointed two Dutch consultants and paid a short visit to Eindhoven, the Netherlands. The two consultants were Ad van Berlo, PhD, and Piet van Stratum, a member of a Dutch organization focusing on older people and technology (Unie KBO – Unie van Katholieke Bonden van Ouderen). They attended some management meetings with the team in the UK and hosted the visit to the Netherlands.

Eindhoven was chosen because it has a number of interesting initiatives including the BEST project, which focuses on safety and security, has a group of retired engineers from a major local firm who have installed assistive technology in their own suburb, and because it is the

home of the Smart Homes Foundation (www.smart-homes.nl). This centre was launched in 1998 and promotes smart home technology, the exchange of ideas, the initiation of projects and implementation of technology and services in practice. It has been recognised by the Government as a centre of national expertise on smart homes since January 2003. The research team also visited a 'smart' refurbishment of a housing association block of flats and the homes of nine individuals who had AT installed. The latter were a mixture of older and younger disabled people.

SOME LESSONS ABOUT THE USE OF ASSISTIVE TECHNOLOGY

Among the factors of comparative interest are: The definition of assistive technology, the policy context, the legislative framework for delivering AT, useful design features, and adaptations and problems.

The definition of assistive technology

The definition used in the UK research was 'Assistive technology is an umbrella term for any device or system that allows an individual to perform a task they would otherwise be unable to do or increases the ease and safety with which the task can be performed'. However questions were raised over whether there is a difference between AT and smart technology – smart technology is not the same as AT, though some AT is smart (van Berlo personal communication, 2003). The Dutch frequently use the term domotics for smart technology; domotics comes from the words 'domus' (Latin for house) and 'telematics'. A Dutch researcher writing about housing claims that attention has shifted from 'what elderly people can no longer do (conforming with the so-called deficit model) towards possibilities of growing old in good health'². This is in line with views in the United States and the UK that a disability model of AT should be replaced with one of encouraging and

maintaining independence³. As van Berlo puts it: "smart homes are more and more including mainstream technologies for the general public, for young and old, with and without disabilities" (personal communication, 2002). In the Netherlands the most common items are alarms, grab rails, level thresholds, raised seats for toilets and raised beds (Van Berlo personal communication, 2003). Use of smart AT in housing for older people is still very much in an experimental stage, as in the UK.

The policy context

In terms of policies both countries are concerned with increasing the options for older people to stay in homes of their own. In the Netherlands there is more pressure to do this as it has a higher proportion of older people (aged 65 and over) in institutional care (9%)⁴ compared with half that (5%) in the UK⁵. In 1994, more than 80% of the budget on services for older people was allocated to residential services⁶. In 2002, this was still the case, although there has been a very strong growth in home care in 2001 and 2002. But the proportion of home care on the total care spending was only 5 % and the proportion on residential care services was 20 %. Policy concerns in both countries are to reduce numbers in residential care and control costs of health care; to help people to remain independently in their own homes and to address the prevention agenda⁷⁻⁸.

The legislative framework for delivering assistive technology

In the Netherlands a situation very similar to the UK appears to exist. There appears to be a confusing system with a variety of funding agencies involved. Housing, health care, social care, and social security are split between public and private sectors and all have separate funding arrangements. There are many different providers for all these services. Geographical boundaries are not uniform.

Eligibility for AT is dependent on disability. There is no funding for smart home systems unless a person has a severe disability. Information for users is limited. The main legislation is the Dutch Adaptation for the Handicapped Act 1994⁹. There have been recent legislative changes that appear to have simplified the system somewhat and made older people eligible for grants previously reserved for disabled people.

Useful design features and adaptations and problems

There were a number of useful design features and adaptations particular to Dutch housing which the UK and others might learn from.



Figure 1: Stairlift in Dutch staircase that is considered too hazardous for use in the United Kingdom

A striking lesson was over *stairs*. The particular design features of Dutch housing has led to approaches not attempted in the UK, in particular for the extremely narrow and winding staircases common in much of the housing. Stairlifts have been produced for situations that would be considered impossible in the UK (Figure 1). Tracks run very much higher above the stairs, supported on batons, rather than resting on the treads. They leave a space beside the track that would be considered unsafe for walking up and down in the UK, particularly where the staircase winds (but the entire staircase would be considered hazardous).

Lessons can also be learned about the raising of floor levels on balconies of blocks of flats so that they are level with the flats. In refurbished blocks the external balcony areas had rubber matting to build up the floor level by 150 mm. This could help solve the widespread problems identified in our UK research where there are changes in floor level. Within homes the use of height adjustable work surfaces and sinks had been used to good effect in kitchens so that wheelchair users could use them. The use of Passive Infra Red Sensors as an alternative to pressure pads for detecting movement was probably more reliable than pressure pads fitted under mats or furniture legs.

In the 'smart home', electronic and computer controlled devices are integrated. Some features are becoming increasingly common in the UK such as video-entry phones, automatic taps, smart door opener, community alarm in all rooms, and automatic lighting system. But others are less common. For example there is great potential in the automatic registering of utility use (which dispenses with meter readings), the outside box for deliveries, automatic taps, and vacuum hose with central dust collection. These would be valuable in homes for everyone and not just older people.

On the other hand some problems were identified. For example although some equipment had been installed many years ago, and was still working well, there had been some problems of getting an installation company to guarantee subsequent maintenance. The lack of suitably trained installation and maintenance engineers was noted. The use of retired people might be one solution. There were some inconsistencies of design such as in a new built project with smart technology where all the AT and adaptations had been incorporated in the property but the electric sockets had not been raised. In one project there was a security system in place at the entrance through a video link and locked door, but access was easy to parts of the rear of the building.

The Smart House was very much the high tech end of AT and incorporated a minimum amount of possessions and furniture. Older people, and certainly many we have visited during our project, seem to have many belongings, furniture, etc. The Smart House was what one would imagine a house laced with technology would look like. There was a colossal amount of wiring within this house and the space required for the control room was a testament to what is required when assorted BUS systems that were working concurrently are used. It also highlights the lack of common standards for BUS systems in this rapidly developing sector. One third of the electronics in that room controlled the entertainment systems. Is this an indicator as to the future of human development / priority?

There is a fear that some AT may be too sophisticated, complicated, or impractical to address real issues e.g. the computer on the worktop in the kitchen of the Smart House. This may not be practical if the kitchen is being used for cooking at the same time as the computer. Also the keyboard embedded in the kitchen

worktop must be very difficult to keep clean whilst the hub located under the below-sink-cupboard has to be prone to spillage from either water and/or cleaning chemicals.

SOME LESSONS ABOUT INVOLVING OLDER PEOPLE

There were a number of lessons about the involvement of older people. Some of these were at a policy level, others at an individual level.

Involvement at a policy level

There are around 450 municipalities in the Netherlands and rather over half of these have a 'senior council'. They represent all older inhabitants, including older people from the local branches of the three main pensioners' national and welfare organisations. A national government-subsidised information organisation, which gives funds to operate, is SeniorWeb (www.seniorweb.nl).

An interesting example of the influence of older people is how initiatives taken by them can lead to national standards. The 'Senioren label', which was developed by an organisation of older people, has set standards for building. This senior citizen label is a consumer quality certificate for older people's housing. It is awarded by a panel of older people. Housing associations and care organisations have to submit projects to the panel at pre-design stage. Developments must provide "homes for life" (e.g. be barrier free); keep costs low; provide easy access to local facilities like shops. This has now been largely superseded by general standards ('WoonKeur') laid down by the Government in April 2000. These have been approved but not yet enforced.

Another example is the National Action Programme Older People and Technology. This is trying to involve older people more in the development of user-friendly (design

for all) products. It is based on the importance of 'listening to the user'. Unless there is cogent evidence to the contrary, the user knows best.

Involvement at an individual level

There is contrasting evidence about the experiences of older people and their experience of AT. For example, research shows that people have different attitudes to technology; some like every gadget they can get, others prefer human help wherever possible^{8,10,11}. Among the people we visited all these traits were found. For example, some found AT excellent but others preferred to struggle. Some people had strong views about what they wanted and how it could save money. One man had been in a nursing home for 12 years. He now had 60 hours of care per week (and a wife to help him). He reckoned that 20 hours could be saved if e.g. he had a smart loo/bidet which could monitor his urine rather than a nurse coming in each day. Another example of the contrast between what the person wanted and the views of the professionals was the absurd example of a severely disabled man in a wheelchair for whom the local authority had installed a vertical lift to the first floor, and a stair lift to the second floor of his house, apparently on the grounds that getting on and off the stair lift would be good for him.

Sometimes the disabled people thought ahead and were able to influence decisions. For example one person with multiple sclerosis had made provision in his bathroom for being showered whilst in a prone position when his condition deteriorates. This highlights the importance of anticipating future deterioration. His bathroom was substantially larger than all the others that we saw. One disabled man had argued for his kitchen to have movable equipment so he could cook for his working wife for half the week.

WHAT CAN WE LEARN

There are obvious lessons that can be learned from the Netherlands and these have been noted above. To summarise:

They reinforce the view that current developments in alarms, monitors, and sensors have great potential for addressing safety and security needs, but do not address many of the other needs that arise from mobility limitations. However all the technology in the world in terms of monitors and alarms can be provided but these still has to have the human response back-up.

There are also lessons for industry and the responsiveness of suppliers/firms to the new demand. A good example was a firm, which put in the security on the run down Tivoli estate. They used to be a firm of painters and decorators. They now put in security with the motto 'designing out crime' but only on a large scale e.g. for estates and not for individuals. There are practical lessons, such as the stairlift for steep stairs and raised floor levels, which can be copied.

It is clear that AT needs to be introduced before people are too old, when it may be more difficult to learn new and quite complex procedures, in order to provide benefits as monitoring and alarm systems in later years. It perhaps needs to be regarded as more of an investment for the future, rather than in any way as cost-effective at the time of installation. All the professionals interviewed stressed the importance of installing AT with the minimum of fuss. No 'hak & breekwork' (major alterations) was specified in one project. Older people interviewed emphasised the need for simplicity.

A clear finding is for the need for guidance about the use of AT. There is need to explain to older people what the AT is and how it works. Although the case of the

tenant who had been provided with two pages of user guidance was impressive, it was unnecessarily complicated and almost certainly developed without user consultation

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References

1. www.equal.ac.uk/AT contains research description and publications; please contact Anthea Tinker or Peter Lansley for future publications
2. Houben P. Challenges in the modernisation of Dutch housing and care for the elderly. *Housing Studies* 1997; 112(3):355-366
3. Agree E, Freedman V. A comparison of assistive technology and personal care in alleviating disability and unmet need. *Gerontologist* 2003; 43(3):335-344
4. Lujanen M and Vesanen P. *Housing of Older People in the EU Countries*. Helsinki: European Union; 1999; p 22
5. Tinker A, Askham J, Hancock R, Mueller G, Stuchbury R. *85 Not Out*. Oxford: Anchor Trust; 2001; p 41
6. Singelenberg J. *Housing and care for older people in Denmark and The Netherlands*. Hope Network. Kidlington: Anchor Trust; 2003
7. Raaijmakers A L P. A strategic environmental planning methodology for housing the elderly. In: M-A Scott, editor, *Aging in place. Proceedings of a housing and planning conference for an aging population, Vancouver, 1997*. Vancouver: Simon Fraser University Gerontology Research Centre; 1999
8. Tinker A, Wright F, McCreadie C, Askham J, Hancock R, Holmans A, *Alternative Models of Care for Older People*. Royal Commission on Long Term Care, Research Volume 2. London: The Stationery Office; 1999
9. Lohman H, van Swet-de Savorin. A protocol for occupational therapists: consultant for adaptations and technical aids. *Technology and Disability* 1999;11:65-69
10. Slangen-de Kort YAW, van Wagenberg AF, Midden CJH, *Adaptive problem solving processes of older persons in their homes*. In: Graafmans J, Taipale V and Charness J (eds.) *Gerontechnology: A sustainable investment in the future*. Amsterdam: IOS; 1998. pp 340-346
11. Collins SC, Dexter SL, Rabbitt PMA. *Elderly people in a new world: Attitudes to advanced communications technologies*. In: Bouma, H, Graafmans, J, editors, *Gerontechnology*, Amsterdam: IOS;1992. pp 277-282