# **ASSISTED LIVING Technology for Tenants**



**An Evaluation of the Pilot Project** 



By the Housing Executive's Research Unit





Amazon Echo

Show



Amazon Echo Dot



Amazon Remote Phillips Hew Light System



Nest Thermostat



Nest Smoke detector





Belkin WeMo **Insight Switches** 



Logicircle

GermGuard ian Air Purifier

Smart energy switch SmartThings Motion Sensor



SmartThings Multi Sensor



SmartThings

Moisture Sensor

TextCare Home Monitoring Pack

Samsung SmartThings Hub

**Ring Video** Doorbell



Logitech Harmony Companion

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# **Assisted Living Technology for Tenants Pilot Project**

# **Background to the research**

In September 2017, The Northern Ireland Housing Executive commenced a pilot project to install a range of assistive smart technology equipment into a small number of tenants' homes in the North West, to support tenants with disability or mobility issues. The project was delivered in partnership with the Western Health and Social Care Trust (WHSCT) and Hive Studios, a Digital Community Social Enterprise. The aims of the project were to determine if and to what extent the use of the technology would allow tenants to live more independently, to improve tenants' quality of life in their homes and enhance their sense of well- being. Prior to installation, an extensive consultation took place with the Health Trust's Occupational Health Team; Housing Executive Welfare Officers and tenants to identify suitable technologies<sup>1</sup> to be used within the homes of participants with a variety of different needs. In September 2017, Hive studios in association with the Housing Executive selected a small number of local homes (15 households, including 2 members of the same household) to participate in the Assisted Technology Smart Home Pilot Programme. At the core of the system was the use of voice recognition systems to trigger the automation of a variety of functions using connected smart devices (Hive studio, 2019). On occasion, where voice issues are a problem for the individual and where manual dexterity is not an issue, Hive can configure a non-verbal interface.

# **Evaluation**

In 2019, the Housing Executive's Research Unit was asked to carry out an evaluation of the Assisted Living Technology for Tenants pilot project on behalf of the Social Investment Team. It was agreed that in order to be eligible to take part in the evaluation, tenants should have been using the assistive technology for a minimum of a year.

For the purpose of the Housing Executive's evaluation, 11 addresses of Housing Executive tenants were supplied to the Research Unit. When the evaluation started it was discovered that installations had not been fully completed in two cases. The final number of participants interviewed by the Housing Executive for this evaluation, who had taken part in the pilot, had access to the equipment for at least a year, and received ongoing technological support during that time was nine. Evaluation of the pilot started in May 2019, with interviews carried out with tenants in September/November 2019.

# Aims of the Study

The overall aim of the research study was to evaluate the use of the technology (voice and video enabled Amazon Echo for communication and control of smart devices, including lighting, power sockets and thermostats) designed to help those with a variety of complex needs. The technologies are customised to each individual tenant. The key research objectives considered were to consider how the newer technologies provided an opportunity to:

- sustain tenancies
- address mobility challenges

<sup>&</sup>lt;sup>1</sup> A full list of technology used is available in Appendix 1

- improve home security
- reduce social isolation
- improve quality of life
- promote social interaction.

#### **Literature Review**

As the housing sector deals with a range of issues, an ageing population and the integration of health and social care, the issue of tenancy sustainability is increasingly important to housing professionals (Norwood, 2017). A sustainable tenancy is one which can be maintained successfully by the tenant throughout the life of the tenancy and for this to happen, the property has to be appropriate for their needs. It is important to consider the types of properties now available and whether they are flexible enough to enable people to stay in their own home if their circumstances change as they get older. Digital technology has a role to play in enabling tenants to remain in their homes.

The Joseph Rowntree Foundation was responsible for the concept of Lifetime Homes in the early 1990s in the UK (DCLG, 2012). Since then the concept has developed into a standard based on design features which can be adapted to the circumstances that lead to reduced mobility for occupants. Many of the design criteria associated with Lifetime Homes aim to maximise the level of independence for occupants within the dwelling. Lifetime homes aim to reduce the need to modify existing homes and move home (Rooney et al, 2017).

#### **Assistive Technology**

Previous research (Harris, 2010) has shown that disabled people wish to use advanced technology to increase independence in their homes, but the cost of both mainstream and specialist devices have been prohibitive. However many technologies which are currently on the market hold the potential to enhance the lives and independence of disabled people (Dewsbury et al. 2002). Research has demonstrated that disabled people engage enthusiastically with advanced technologies and appreciate the increased independence which access to such devices allow. The pace of change in the area of assistive technology in recent years has been rapid and more devices have become available which are more suitable for individual disabled people.

#### What is Assistive Technology?

The term 'Assistive technology' incorporates a wide variety of devices and existing research, supports the greater use of assistive technology (Beech & Roberts, 2008). Assistive technology is a wide ranging concept covering 'any device or system that allows an individual to perform a task that they would otherwise be unable to do, or which increases the ease and safety with which the task can be performed' (Cowan & Turner-Smith, 1999). Despite the positive impact assistive technologies can have on the lives of people with disabilities, access is limited in many countries (Borg, Larsson & Ostergren, 2011). The United Nation's Convention on the Rights of Persons with disabilities (CPRD) requires states to take measures related to the provision and use of assistive technology.

Telecare assists people who need the help of health services to continue to live at home, by using technology which can monitor activities and safety, activate reminder systems and increase home security (CPA, 2014). Harris (2010) argued that many technologies which

are already in people's homes, could be used or customised to meet people's changing requirements over the course of their lifespan. As time moves on more devices become available, which are suitable for individual disabled people as a result of increased choice in the market and improvements, such as the development of lighter weight materials.

#### Use of assistive technology in the UK

Hampshire and Oxfordshire councils have embraced the potential of new technology. Both councils have worked with Amazon to explore how its voice controlled intelligent personal assistant, Alexa can deliver more personalised care to service users (Haynes, 2018). Oxfordshire council was keen to discover how the new technology could support older people and help to connect them with their communities. The assistive technology performed tasks for service users, such as setting reminders, providing news updates and playing audiobooks, helping to give service users a greater sense of independence.

Hampshire County Council was awarded funding from the Local Government Association (LGA) and NHS Digital to run an assistive technology trial. It was one of the first local authorities in the UK to use voice recognition technology to support elderly and disabled residents receiving care at home (Sweeney, 2018). Working with Amazon, the council piloted a customised version of its Alexa software which was specially adapted to help those with disabilities or illnesses to live independently and reduce isolation. It was tested in 50 homes in Hampshire throughout 2018.

The pilot began with an intensive discussion of the possible outcomes that each service user wanted to achieve (Age UK, 2019). The range of possibilities included; setting reminders for visits, taking medication, controlling the environment through activating lights and fans, adjusting thermostats and opening and closing windows, turning on music and communicating with family. The evaluation of the pilot demonstrated benefits to users, with 68 per cent agreeing that it helped them to maintain their independence. More than two-thirds stated they were able to regain some independence.

#### **Assistive Technology in Northern Ireland**

The Northern Ireland Housing Executive has investigated the use of Electronic Assistive Technology over a number of years, including a study published in 2010, which looked at the perceptions of key decision makers in Northern Ireland about the integration of electronic assistive technology into housing to support Northern Ireland's older population and an Environmental Control Systems Scoping Review commenced in 2017, under the Housing Executive's Adaptations Team.

#### The use of Electronic Assistive technology in supporting older people

In October 2010, a study entitled Electronic Assistive Technology-Supporting Older People within Local Communities was commissioned by the Northern Ireland Housing Executive and carried out by Suzanne Martin of Ulster University. The research explored the perceptions and knowledge of key decision makers in Northern Ireland from health, housing and the voluntary sector about using electronic assistive technology to support ageing in place for the older population in Northern Ireland. The concept of 'ageing in place' was articulated as supporting people with disabilities at an earlier stage and enabling them to remain at home for longer (Martin, 2010).

Interviews with key stakeholders involved in the development and implementation of supported housing options for older people in the 2010 study (Martin) have stated that technology contributes to affording individuals more control over their own lives. Technology was considered to have the potential to support people across all age ranges and the view was expressed that often it was introduced too late in the process of receiving support. Participants expressed the view that the introduction of technology at an earlier stage would prolong the independence of people at home. There was a recognition that the range of devices had increased dramatically and the design and range of technology was considered significant in terms of healthcare for the different client groups with different needs. As Martin (2010) states innovation was evident across Northern Ireland with examples of good practice in both technology implementation and housing design.

#### **Scoping Review on Environmental Control Systems**

RF Associates in association with Professor Suzanne Martin of Ulster University were appointed to undertake a scoping study of Environmental Control Systems (ECS) for NIHE in January 2017. This piece of research, set out to review current provision and help determine how co-ordinated health and social care (HSC)/housing service provision of home environmental control technology can support independent living of disabled people in Northern Ireland. The work focuses on ECS that enable co-ordinated control of the home environment by a person living with a physical disability (RF Associates & Martin, 2018). This includes a range of electronic assistive technologies, such as door entry systems, automatic window and ventilation controls and automated control of heating, light and power, which enable control over the home environment.

Environmental Control Systems are one of a number of categories of assistive technology, which covers a range of devices which have been evolving as technological developments have taken place. This review (RF Associates & Martin, 2018: p4) suggests that one of the main benefits of such devices is that they enable the autonomy and independence of individuals, facilitating control of their environments. The review also found that access to ECS for people with a physical disability is achieved through Community Occupational Services and the approach from assessment through to provision and maintenance differs by HSC Trust Area.

RF Associates and Martin (2018) found that the range and functionality of ECS currently available was increasing with adaptability inbuilt to personalise systems. The pace of technology development resulted in new systems and devices constantly evolving and emerging in the market place. It was now possible to create a home ECS that incorporated established ECS devices alongside other new technologies. The authors stated it was difficult to gather a full picture of all the ECS technologies and devices which were available to those with physical disabilities.

Within the HSC Trusts, occupational therapists work with a small number of commercial suppliers who make technology based recommendations. Occupational therapists have limited knowledge of the evolving technologies and are advised by a small number of providers who may be less aware of suitable options. The reliance by individual HSC Trusts on their own procurement practices means that relatively few devices are procured on an annual basis, meaning that occupational therapists are provided limited opportunity to develop their learning around this area and are fully reliant on the technology recommendations of a small number of suppliers. The authors recommended the

development of a centralised single procurement framework for the whole of Northern Ireland which would offer access to a wide range of suppliers.

#### EAT Electronic Assistive Technology: North Lisburn Supported Housing

In November 2017, RF Associates was commissioned by the Northern Ireland Housing Executive in partnership with the Department for Communities, to assess the role and impact of assistive technology within the North Lisburn Supported Housing Scheme, on the quality of tenants' lives compared to their previous circumstances. The facility sought to enable individuals with neurological conditions and acquired brain injuries to gain autonomy, control and independence in their own home. In order to enable this, a range of assistive technology was provided in each home, as well as a care package and support to enable independent living. Overall feedback on the role and impact of technology from all stakeholder groups was very positive and the majority welcomed the use of Assistive Technology. Staff, family members and friends were all generally positive about the impact of technology and the choice of control it enables. Tenants were afforded a much more independent living environment than previously and all the feedback from them was positive in relation to the facility.

# Assisted Living Technology for Tenants Pilot Project

In September 2017, Hive studios in association with the Northern Ireland Housing Executive selected fifteen Housing Executive tenants' homes in the North West to participate in an Assistive Technology Smart Home Pilot Programme (Hivestudio, 2019). The final number of participants who had all components installed and took part in the pilot was nine. A small number of private installations were also carried out although they are not part of the research study. All respondents have had access to the assistive technology for at least one year.

#### Methodology

The Evaluation of Assisted Living Technology research project was undertaken by the Housing Executive's Research Unit on behalf of the Social Investment Team. The data collection process involved face- to- face interviews <sup>2</sup>with nine tenants who had taken part in the Assisted Living Technology pilot programme. The interviews lasted approximately thirty minutes. Information sheets<sup>3</sup> detailing frequently asked questions concerning the interview process were posted to the tenants prior to the interviews.

Participation in the study was via informed consent and participants were able to withdraw at any time. Consent forms<sup>4</sup> were distributed to participants. Data gathered from this study were held confidentially and anonymity was protected in respect of respondents. The interviews were digitally recorded and transcribed by the researcher to ensure accuracy and a full analysis of the findings. The written version of the interviews will be retained and destroyed in line with the Housing Executive's storage and retention policy.

<sup>&</sup>lt;sup>2</sup> Appendix 4 (interview questions)

<sup>&</sup>lt;sup>3</sup> Appendix 2(information sheet for respondents)

<sup>&</sup>lt;sup>4</sup>Appendix 3 (consent form)

# **Findings**

This section begins by outlining the data concerning the interviews with tenants taking part in the Assistive Technology pilot project and goes on to present the experiences of tenants with the new technology.

The project was delivered in partnership with the Western Health and Social Care Trust. The pilot programme aimed to improve flexibility, mobility and security for disabled, elderly or vulnerable tenants and the only prerequisite was that tenants had access to broadband. It was due to last at least 12 months, with Hive installing and supporting the devices during that period, at the end of which tenants would retain the technology. Among the technology used in the scheme was voice and video enabled Amazon Echo for communication and control of smart devices, including lighting, power sockets systems, thermostat and monitoring devices for the benefit of the elderly living alone.

#### **Respondent Profile**

Respondents were asked about their home situation. Information included the following:

• Five respondents lived with their family, with the remaining four living alone.

• Three of the tenants had lived between 20 years and 30 years at their present address, with the remainder living there between 1 and 5 years.

- •The vast majority of respondents (8 respondents) resided in an urban area.
- Four participants lived in a bungalow, with five respondents living in a two storey house.

#### **Equipment supplied to tenants**

The equipment supplied to tenants was tailored to their individual needs depending on their level of disability. In the case of tenants with limited mobility, voice recognition allowed them to issue commands to Alexa, such as turning on lights, switching television channels and keeping in touch with family members. In cases where there was a problem with speech, as long as manual dexterity can be achieved, the tenant was supplied with a tablet to use.

The equipment supplied to the nine participants in the pilot is set out in the following table.

Participant	Activation	Type of Equipment
	Method	
1	Voice	Echo Show, Echo Spot with camera, Logitech Harmony, nest thermostat,
		video doorbell, intercom, smart plugs.
2	Voice	Echo Show, Echo Spot, video doorbell, smart lock, light bulb.
3	Voice	Echo Spot, colour lights, Smart bulb.
4	Voice	Echo Spot, sensor on front door.
5	Арр	Echo Show, Echo Spot, video door bell, smart plugs.
6	Voice	Echo Show, Smart plug for TV & Radio, Smart lights, Video door bell.
7	Voice	Echo Show, Echo Spot, Logitech Harmony, Firestick, video doorbell, nest thermostat
8	Voice	Echo Shows (full size screens), video door bell, intercom, lock, smart
		plugs.
9	Voice	Echo Show, Echo Spot, Smart light bulbs, Firestick, smart plugs.

All respondents had video door bells and said that these enhanced their perception of feeling safe. Two respondents had Logitech Harmony to control their televisions and two other respondents used smart plugs to operate television, radio and switch on the kettle. Smart light bulbs to control lighting in various rooms was particularly beneficial for the tenants, as was the nest thermostat to control the heating in a small number of homes. Previous literature has mentioned the use of technology to monitor activity and safety. This was apparent in one case where there was a sensor on the front door which alerts other family members when the door opens and a video feed which can monitor the young disabled person's bedroom and relay it to a family member's mobile phone. The Alexa equipment has also been useful in setting up reminders with the vast majority of tenants mentioning this feature as being useful for appointment reminders and alerting them to remember to take medication. In one case smart bulbs can be set to change colour so that there is a day light and a night light, which is useful for the tenant.

#### Main benefits of Assistive Living Technology

The assisted living technology has empowered individuals to perform functions which previously they would have asked family members or carers to do. The main benefits mentioned by tenants were being able to remotely switch on/off lights and remotely operate the video door bell and locks, functions which made an enormous difference to the lives of disabled tenants' lives. One respondent explained how the technology has changed his life;

"I have no night vision so I can ask for the lights to be turned on, whereas before we had to leave all the lights on. Also we can dim the lights or can brighten them up. If it is dark we can dim the lights if watching television and if I want to get up I can brighten them up by voice command"

The video door bell is a feature which was mentioned by all respondents, both in terms of security and in the way it allowed the tenant to observe the exterior of the front of the house, even when he/she was in another room. A respondent explained the benefits from his point of view:

*"It takes real effort for me to get to the door, so with Alexa I know who it is. I can see who is at the door and if it is someone I know I can say give me five minutes to get to the door."* 

The camera located in the bedroom, as well as the ability to use the equipment to turn on the bedroom lamp was a major advantage for one tenant. Her husband/carer explained the impact it had on both their lives:

" To be able to use the equipment to turn on the bedroom lamp gives her comfort. There is a camera, an alarm in the bedroom so that her carer can hear her shouting if she needs help getting up, which means that she is not stuck there."

#### **Tenancy Sustainability**

The majority of respondents (7 out of 9 respondents) stated the installation of the Alexa equipment allowed them to remain in their homes. The level of satisfaction expressed by tenants was very high and this was increased as a result of having access to the assistive technology. As one respondent stated:

"Alexa has helped me to stay in my home. My mother has Alexa as well and even though she doesn't live near me, she can see me and know that I am well."

In another case a tenant reported that the Alexa technology was installed just at the right time:

"Yes it has helped me to stay here. This was temporary accommodation. I was offered an apartment which I turned down because by that time Alexa had arrived. Where I am now is much better."

Other tenants agreed that the equipment had allowed them to remain in their homes, citing benefits such as being able to ask Alexa for the latest news, weather forecast, time of day or to turn on the television. A respondent concurs with this view:

"It definitely helped us to remain in our home. It is a great system. I can ask Alexa what day it is, what time of day it is. I can set reminders which would be good for someone on their own. I don't have to ask anyone to switch the television over."

Six out of the nine respondents had adaptations or extensions added to their houses because of their disabilities. In one case the house was adapted specifically for the tenant, who required a ground floor bedroom and the tenant stated he and his family would not think of moving in the future. The level of satisfaction with their homes was very good with eight respondents stating they have never considered registering for a transfer or moving



home. As one respondent commented, it was the adaptation rather than the Alexa equipment which allowed him to remain at home :

"No I did not ask for a transfer. There was talk of moving because the room was too small but then the house was adapted. It was the physical adaptation which allowed me to stay in my home."

Another respondent stated:

"I'm really happy here. When I'm on bad form, everything is on my doorstep. I can ring and they will bring me anything I need from the shop. Alexa has helped me to stay in my home."

The one respondent who had considered moving but decided against that decision explained his decision in the following words:

"I did, I considered it but then I thought I was too long here and it is so quiet here. The decision not to move was not to do with Alexa being installed. The occupational therapist put in for an extension to the home."

#### Level of independence

The Alexa assistive technology has increased the independence of disabled tenants, as it has allowed them to perform a range of tasks, such as turning on/off lights, turning on the kettle, switching channels on the television and opening/closing the front door, all functions which have previously been very difficult due to reduced mobility or other debilitating physical conditions. All respondents agreed that Alexa made an immense difference to their independence. As one respondent stated:

"Yes there is a huge difference in my day to day life. I don't have to call in other people to help me. Before, I had to get a lot of people to do things for me."

Another tenant stated that it made an enormous difference to his life:

"Yes, I never would have dreamed there was anything like this. So for something as simple as medication, I can ask Alexa to remind me".

He also stated that he would often get into the car and would not be sure if he locked the front door of his house. Alexa is able to remind him about this, thus negating the need to get out of the car which is important for someone with limited mobility.

For other tenants with mobility problems, the assisted living technology allows the tenant to operate switches without difficulty:

"It helps me to get things done which are hard due to lack of mobility. I think it is brilliant. It meets my needs, I can tell Alexa to switch on the kettle. I can use it for the bedside lamp which I need if I get up through the night."

In one case the Alexa equipment has been beneficial for the whole family. It has increased the independence of both the carer, who is able to return to paid employment and the disabled person. As the carer/parent states:

"It was a nightmare before as I had to constantly watch my son. Now if he goes upstairs I can see him. I can check it on my phone. It gives him independence round the house. It also gives me peace of mind".

#### Feeling safe in your home

The installation of the equipment, particularly the video door bell and the smart locks have enhanced safety in the home and in particular respondents' feeling of security in their homes. It gives the tenant the opportunity to find out who is at their door, before they open the door. All respondents agreed that this feature is one of the main benefits of the system. As one respondent states:

"I do feel safer. There is a camera at the front so I can say to Alexa show me the door and I can see who is there. If you are on your own, you can call Alexa, there are numbers set up if there is an emergency and they can be contacted. For someone on their own, it is a real benefit."

It is also mentioned by a respondent who has limited vision and depends on the video doorbell facility in order to remain safe. The following quotation demonstrates this:

"Yes, I feel safe as before I would be opening the door and I wouldn't see who was there. The camera at the front door has an infra- red light with a night vision and it is very clear who is at the door and I can see who is at the door."

Two respondents mentioned how previously they would have felt less safe as they would either have left the door unlocked or were in the position of having carers posting keys through the letterbox. As one respondent stated:

"I feel a lot safer, for if I was on bad form previously I would have left the door open. Now I feel a lot safer as I can lock the door and still see who is coming and going".

The other respondent explained the benefits of the video doorbell, smart locks and being able to remotely control the lights:

"Before, I had to get a lot of people to do things for me. Security was the main concern, with people posting the keys in the door which wasn't feasible. The door and the lights are the main benefits. I used to have to keep my lights on. Now knowing that all lights are off, I can sleep better."

Installation of the new technology

Prior to installation, Hive, who had responsibility for setting up the equipment and providing support for the first year, consulted with occupational therapy services, the NIHE welfare officer and the tenants to discuss the best options for each household. A small number of respondents specifically mentioned that the Welfare Officer the Housing Executive from informed them about the pilot and suggested the technology would suitable for them. be All respondents were very positive



about their experience including those with a limited knowledge of technology. As one respondent stated, the process was smooth with a conversation taking place between Hive and the occupational therapist about certain items being compatible.

"There was very good back up from Hive. On a couple of occasions the grandchildren unplugged something and someone came out to sort it out.

For anyone on their own, with no knowledge of new technology, the backup is good. It is far more practical than we thought it would be."

Another respondent had a very positive view of both the installation and the equipment.

"I would be lost without it. Once it is set up and running it is great. On the initial visit people from Hive ask you what aspects you would benefit from. It is only now that I'm learning more."

According to the respondents there were no barriers, just a few initial problems, such as teething problems with the locks and Alexa becoming accustomed to the speech and accent of the tenant, issues which were quickly resolved. The nest thermostat, which controlled the heating system in the house presented a challenge for a small number of tenants and in one case it was decided to remove this part of the system. One respondent explained the situation:

"There was a bit of a problem with the heating end of it, so we got that part taken out and we are happy enough with that, because we can set the timer for the heating to come on and off. It was something to do with our boiler and the wiring of the house. It was the thermostat and we got that taken out."

#### Training in using the equipment

All participants stated that they had received training in the use of the equipment installed. One respondent explained how the occupational therapist and the representatives from Hive ensured they were able to use the voice activated Alexa technology and demonstrated how to operate the equipment.

"We were shown how to use it by Hive. We were asked if we had any questions and if we wanted to try it. At the start Hive and the occupational therapist made sure you have enough speaking capacity so that Alexa can understand you."

Half of the respondents were knowledgeable about technology and found any problems they encountered were quickly sorted out by Hive staff:

"Yes, they came out and showed me how to work it. It wasn't too hard to use. I used voice controls."

Those respondents who had less knowledge of technology also agreed that the training they received was very helpful. One respondent concurs with this:

"Yes, Hive were here to provide training. Any questions I would just ring. Lately Alexa was getting confused and putting the television on instead of the lights because the names were similar. So Hive just renamed them."

#### **Operating the equipment**

All respondents stated they did not have any problems operating the equipment as the initial training was followed up by good quality ongoing support by Hive, whenever they required it. As one respondent stated:

*"I received a bit of training at the start and then I rang Hive and I got ongoing support/training anytime I needed it. Hive always came when I had problems."* 

#### Another respondent said:

"No problems at all. Most of it is updates, it either does it or it doesn't require it to be able to function. We received plenty of training from Hive."

A respondent went on to elaborate on the impact the pilot has had on his life:

"When there were any problems Hive came out. I'm really happy. It made a big difference in my life. Anyone getting it, would make a big difference in their life. It would change your life when you embrace the technology."

#### Level of satisfaction with the technology

The level of satisfaction with the assistive technology installed in tenants' homes is very high. All participants gave a maximum rating of 10 out of 10. In addition one participant stated if it was possible to give a higher rating she would do so. The technology has made a very positive contribution to the lives of the tenants participating in the pilot. The



following comment by a tenant provides evidence for this viewpoint;

"She wakens me up. She turns off my lights. I couldn't live without it and that's the truth."

The carer of another tenant was very positive about the impact the technology had on their lives:

"We weren't sure about the technology at the beginning, but it has been so practical. The fact that it works for the two of us is good. I can go out the back or go about the house, I don't have to be there all the time"

# **Concluding remarks**

The Northern Ireland Housing Executive has investigated the use of Electronic Assistive Technology over a number of years. In September 2017, Hive Studios in association with NIHE and the Western Health and Social Care Trust (WHSCT) selected fifteen Housing Executive homes in the North West to participate in an Assistive Technology pilot programme. Evaluation of the project took place between May and November 2019. The final number of participants who had all components installed for at least one year was nine.

Previous literature has suggested that this type of technology can be used to monitor activities and safety, activate reminder systems and increase home security. The present study concurs with this.

The level of satisfaction with the Alexa assistive technology is very high. All participants gave the pilot study a rating of 10 out of 10. The technology has made a very positive contribution to the lives of the tenants participating in the pilot programme. The assisted living technology has empowered tenants to perform functions which previously they would not have been able to do. The main benefits were being able to remotely switch on/off lights, television or radio and set reminders for appointments and taking medication. All respondents have video door bells which increase their safety, as they are aware of who is at their front door.

The vast majority of respondents stated the installation of the Alexa equipment allowed them to remain in their homes. All respondents were very positive about their experience of the Alexa equipment. According to respondents there were no barriers in getting the equipment. All participants stated they had received training in the use of the equipment installed and they did not have any problems operating the equipment, as the initial training was followed up by good quality ongoing support by Hive.

# **Appendix 1: List of technological devices**

•Amazon Echo/Echo Dot-voice commands for smart devices for internet browsing, music and radio;

- •Amazon Echo Show, with visual information/video display;
- Philips Light system-lighting controls;
- Nest Thermostat- remote or voice control of heating;
- •Nest Smoke Detector;

•WeMo Insight Switches-simple WI-Fi enabled wall sockets enabling voice control of televisions, radios, lamps;

• Text care Home Monitoring-home monitoring for the elderly and vulnerable;

•Smart Things Sensors, which can monitor whether doors or windows have been left open and can also monitor temperature and vibration;

• Ring Video Doorbell- Home security doorbell with integrated camera which sends video of callers to home occupant over home broadband.

# **Appendix 2 - Information Sheet for Participants**

# **Frequently Asked Questions**

# **Evaluation of Assisted Living Technology Pilot**

Please take the time to read this information and please feel free to ask any further questions you may have about our research (contact details at the end of this FAQ).

#### What is this study about?

The aim of the current project is to help the Housing Executive to evaluate the pilot which installed a range of assistive smart technology equipment into a number of tenants' homes by finding out if and how the technology helped you to live more independently and if it improved your quality of life in your home.

#### Do I have to take part?

No, you are free to change your mind. Taking part is totally voluntary. Even if you agree to participate now, you can withdraw at any time or refuse to answer any question.

#### How will the research be used?

We will use the findings when considering whether to extend the pilot to tenants in other areas.

# Who is conducting the research?

The Housing Executive's Research Unit will undertake the evaluation of the Assisted Living Technology Pilot, on behalf of the Social Investment team.

#### Who will interview me?

You will be interviewed by a researcher from the Housing Executive's Research Unit. Our researcher will show you their Housing Executive staff identification card which has their name and photograph on it, before your interview.

# What will taking part involve?

This research will be carried out through a face-to-face interview. With your consent, we will digitally record the audio from your interview. This will ensure accuracy and enable a full analysis of the findings.

#### Will anyone hear my interview?

Your interview will only be heard by members of the Housing Executive's Research Unit involved in this project. The digital recording of the interview will be transcribed (written down in text format) to help us analyse your comments along with the views of other people who took part in the pilot. This transcription will be anonymous. After it has been transcribed, the digital recording of your interview will be destroyed. The written version of your interview will be retained and destroyed in line with the Housing Executive Retention Policy.

#### Will anyone know I have taken part?

Your interview will be treated in the strictest confidence; only the staff of the Housing Executive's Research Unit involved in the project will know you have participated. We may use quotes from your interview in the final report but it will not be possible to identify you from them.

#### Will taking part be confidential?

Yes, everything you tell us will be confidential. Your identity will remain *anonymous* in any reports produced. Any parts of your interview which may reveal your identity or the identity of people you speak about will be anonymised. If we use direct quotations from your interview in our final report these will be anonymised and you will not be identified.

# What will happen to the results of this study?

The findings from all of the interviews we conduct will be compiled in a report by the Housing Executive's Research Unit. The report may also be published on the Housing Executive's website www.nihe.gov.uk.

#### Who can I contact for further information?

This project is being managed by Patricia Devine (Assistant Research Officer) of the Housing Executive's Research Unit. You can contact her directly on: Email: <u>Patricia.Devine2@nihe.gov.uk</u>: Tel : 028 9598 2608 Or Email: <u>Patrick.Finucane@nihe.gov.uk</u> Tel: 028 9598 2543

# **Appendix 3 - Consent Form**

# Research project: Evaluation of Assisted Living Technology Pilot

- I consent to taking part in the Housing Executive's evaluation of Assisted Living Technology Pilot
- I consent to the audio from my interview being digitally recorded.

#### Signatures

Research participant......Date.....

# WITHDRAWAL OF CONSENT

You can withdraw your consent to the Housing retaining and sharing your contact details with Supporting Communities at any time by contacting Patricia Devine via telephone (028 95982608), emailing patricia.devine2@nihe.gov.uk or by writing to:

Patricia Devine

Research Unit,

Housing Centre

Northern Ireland Housing Executive

2 Adelaide Street

BELFAST

BT2 8PB

You do not need to explain why you are withdrawing your consent. However we would appreciate if you can identify the service/process you no longer consent to. This will enable staff to address your request accurately and promptly.

For Housing Executive use only.

To be completed by interviewer:

I confirm that I have outlined the nature of the study and have given the participant a copy of the Participant Information Sheet which contains all necessary information and contact details.

.....Date.....

# **Appendix 4 - Interview Guide**

What is your current living situation (living alone, living with family)?

How long have you lived here?

How did you hear about the pilot?

What was it like before you received the assisted technology?

Do you have difficulty with the following sensory motor functions- seeing, hearing, walking, lifting, speaking?

What AT technology were you supplied with ?

Does it meet your needs? What would be the most used functions of the technology?

What does it allow you to do that you were unable to do before the AT was installed

Do you feel safe in your home? What about before you had Alexa installed compared to now with the assistance of Alexa?

Were you registered for a transfer or did you consider moving house?

Did the installation of Alexa help you remain in your home?

What impact has the Assisted technology had on your life?

To what extent do you agree that the Assisted technology has contributed to your independence?

What were the biggest barriers you faced in getting the right AT?

Did you have any input in the type of AT you received?

Do you have family members/carers who were able to help you in initial stages?

Did you receive training in using the equipment?

Have you received ongoing support?

Have you had any problems with operating the equipment?

Would you give the Alexa Assistive Technology Pilot a rating out of 10?

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# ABOUT THE HOUSING EXECUTIVE'S RESEARCH UNIT

As the strategic housing authority for Northern Ireland, the Housing Executive has a statutory responsibility to regularly examine housing conditions and need, and may also conduct or promote research into any matter relating to any of its functions.

The Housing Executive's research programme is drawn up in consultation with key internal and external clients and stakeholders. In keeping with the strategic and enabling role performed by the Housing Executive, the research programme looks at a range of issues including and beyond those relating to its landlord function, and seeks to inform data and evidence needs across all tenures. As such, the research programme comprises both surveys and analysis carried out in-house and commissioned work undertaken by independent experts and social/market research companies, where a larger fieldwork resource is required.

Research undertaken by, and for, the Housing Executive informs the organisation's corporate and business plans, provides an evidence base for decision making, assists in the evaluation and impact assessment of policies and strategies and feeds into broader collaboration with other research and housing organisations across the UK.

For more information on the Research Unit please visit: <u>https://www.nihe.gov.uk/Working-With-Us/Research</u>



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