TECH
Technology Enabled
Care in Housing

Albyn Housing Society – Fit Homes

About 'Fit Homes'

Fit Homes aims to utilise data capture and Internet of Things capabilities to predict and prevent episodes that can lead to ill health. This should enable people to live independently at home for as long as they want, while potentially allowing for early hospital discharge, with potential savings for health and care services.

The central concept of Fit Homes is that the accommodation will include ambient, physiological and building sensors. The sensors will collect data that can be monitored and responded to by a variety of agencies. The pilot phase comprises 16 homes at Dalmore in Alness, Ross-shire, which will provide proof of concept.

Fit Homes have been innovatively designed to be more accessible and adaptable than current housing options. They are fully digital, with digital phone and internet connections provided via fibre to the premises, and no analogue connections. The first cluster is specifically targeted at people with long-term health conditions or who are at increased risk as a result of ageing. They may or may not already be receiving health and social care services.

The Fit Homes concept has been jointly developed by Albyn Housing Society, modular construction firm Carbon Dynamic and NHS Highland. Inverness and Highland City-Region Deal funding is supporting the further development of the technology, as well as the development of an additional 32 Fit Homes across the Highland region. The Digital Health & Care Institute funded research that helped develop the concept and is funding a Social Return on Investment study, which is being undertaken by the University of the Highlands and Islands. The Data Lab – the Scottish Innovation Centre charged with generating economic, social and scientific value from big data – is also supporting the project by funding research into predicting falls, led by Robert Gordon University.

Partnership Working

Fit Homes has been underpinned by partnership working at all stages of the project. The Fit Home itself has been co-designed by partners using virtual reality technology. This collaboration has included potential residents, schoolchildren, doctors, nurses, occupational therapists, health and social care managers, technologists and enterprise executives – in other words, anyone who can offer experience, expertise and insight to ensure that the project results in a sustainable and successful model for the future.

Connectivity

Albyn deliberately sited the pilot location in an area where connectivity is as robust as possible. The Dalmore Fit Homes are located close to the main fibre line installation in the Highlands, meaning that the fibre broadband in the homes is the fastest, most reliable, consistent landline broadband currently available. It offers the reliability of bandwidth required for Fit Homes, while also ensuring that tenants' own domestic use of broadband isn't affected.

Albyn has concluded that for innovative solutions such as Fit Homes, broadband packages will need to develop in the future. Currently, broadband services operate on very narrow principles. They can only be ordered by a tenant or business for example; not by a business that will then charge a tenant.

Connectivity will also be one of Albyn's biggest challenges in terms of scaling up the project, especially in more rural areas. Through the Inverness and Highland City-Region Deal, Albyn has funding to build more Fit Homes (32 in total) in various clusters, with at least two of these clusters being in remote rural areas. Albyn is talking with other organisations to find out how it can get the most reliable connectivity, including options for mobile connectivity. Albyn also sees potential benefits for whole communities if further development of the Fit Homes concept can bring in extra infrastructure around connectivity.

Technology Development

Albyn needed to identify a suitable technical partner, starting from a base of very little technical knowledge within its own project team. The process of selecting a technical partner was a steep learning curve, which resulted in a number of useful lessons.

The original technology solution identified was the most developed of its kind and seemed a logical fit. However, there was the possibility of high licence costs and an entrenched business relationship, both of which Albyn wanted to avoid. The organisation was also concerned about 'giving away' a lot of its own innovation. It became clear to Albyn that culture and ethos were important considerations, and that the technical partner chosen must have a similar approach. The decision was therefore taken to develop a bespoke system with support from Rapport, a social business.

Other technology developments included:

- developing a secure externally hosted database, domain names, data flows and a staging environment
- evaluating and selecting the most appropriate hardware to use
- installing a test system in the two houses nearest to completion
- developing prototype tenant and carer dashboards.

Taking A Person-Centred Approach

Early conversations took place with both prospective and allocated tenants to help them understand the technology being tested and their role within it. All the tenants have expressed a willingness to participate in testing the system and associated research in order to explore the benefits to themselves and to test something that could potentially help many others.

The background technology enables a wide range of non-obtrusive, passive sensors to be connected through a single gateway to a single background platform with analytics that collate and process the data. This can then be made available in customised formats to individuals, relatives, carers and receiving centres. It provides a more complete picture of an individual's activity than known analogue or digital options, as well as greater flexibility of responses and reliable support for diagnosing and tracing the causes of illness.

The range of health conditions and circumstances of the allocated tenants also provides an opportunity to learn from a wide range of individual situations and to further develop the technology in response to these.

Data Collection

Each Fit Home is equipped with a passive monitoring system with sensors that measure movement between rooms, temperature and humidity, cupboard and fridge use, external door entry and exit, and so on. The information from these and other sensors creates a pattern of activities of daily living. Each tenant has a login that allows them to access their own information, which they can share with whoever they wish. The information can then be used in a variety of ways, including to help relatives and carers who are supporting the tenants, by showing them what has been happening in the house that day, yesterday, over the last seven days or any other period. The information can also be viewed in real time, so that relatives and carers can be immediately aware of incidents.

Data protection issues and scrutiny are vital to the integrity of the Fit Homes model. Security of data is paramount, alongside the individual's choice of who can see their data. However, Albyn didn't want to just replicate the ethics model used within the health field, but to develop a better model that as well as being more effective from the developer side also gives a collective but independent voice from the user side. Albyn is aware that statutory agencies are also looking at this and is therefore in conversation with professionals within the field to explore how such a body might work with the Fit Homes model.

Specifically regarding data protection, Albyn has had meetings with the Information Commissioner's Office in Edinburgh, which has offered practical advice and guidance for the management and protection of the data it is gathering.

Albyn has also had a number of conversations with legal representatives to make certain it has the appropriate wording in its tenancy agreements to ensure that Fit Homes are inhabited by people who will use and benefit from the technology, while adhering to Scottish housing regulatory requirements.

Allocations

Allocating the Fit Homes meant developing a new allocations methodology, testing and refining that methodology, assessing applicants and identifying the first cohort of tenants.

Albyn has been surprised at the range of applicants who can benefit from the combination of accessibility and digital support offered by the Fit Homes. It agreed that occupants had to need both the physical home and the technology, so nobody was allocated a home who had only one of these requirements. The tenants allocated tenancies in the Fit Homes range in age from 18 to 90, include both wheelchair and non-wheelchair users, and a wide range of limiting health conditions.

It took some time, negotiation and having the 'right' people round the table to develop a shared vision for allocations with NHS Highland and The Highland Council (HC), but the partners all agree that the initial allocations were successful. They now have to look at what the allocations part of the project can deliver for the next stage of development.

Workforce Development

The development of Fit Homes has been a huge learning curve for Albyn. The staff leading the project didn't have a technology background, but were interested in people and trying to help meet their needs. They have now gained extensive knowledge of various technological devices and solutions, data and the uses of data, connectivity issues, and new ways of allocating houses. They have already been asked to share their knowledge and experience with various organisations, and are doing so.

The physical construction of the Fit Homes was led by Albyn's assets and development team. This was the first time they had been involved in a modular build and it presented several challenges, including delays in completion. Again, this was a learning experience and will inform future projects.

Now that the Fit Homes are complete, additional input is needed from the housing staff. This includes more input at the allocation stage and more intensive housing management once people move in, owing to their different vulnerabilities and requirements.

Funding

The project was supported by a Scottish Government housing grant and funding from the Inverness and Highland City-Region Deal. Researchers at the University of the Highlands and Islands developed the proof of concept research with financial support from the Digital Health & Care Institute.

Albyn has also been successful in securing funding through the Inverness and Highland City-Region Deal to develop a further 32 Fit Homes across the Highland region, using the same co-production approach and providing a sustained opportunity to develop and refine solutions for widescale roll-out.

Albyn's vision is for residents of the Highlands and beyond to be able to access affordable, effective and intuitive sensor, gateway, platform and analytics solutions that can support them at all stages of life, but especially during periods when they are affected by long-term illness or the effects of ageing.

Albyn was allocated £11,525 of TEC Ready funding to support the testing of a fully digital approach to incident and behaviour monitoring at home. The TEC Ready-funded pilot provided a significant step towards finding and developing solutions that can be implemented at scale for the benefit of all.

Lessons Learned

A commitment to core values across partners, along with the determination to keep going and find solutions to challenges, have all been required to keep the Fit Homes project moving forward.

Albyn has learned that it's possible for a housing association to bring together a group of partners with a shared vision and complementary expertise to develop their own prototype product, with the potential to be scaled up widely. Traditional models suggest the public sector as a lead agency. However, Albyn has concluded that the Fit Homes initiative has shown that housing associations have the ability to develop and deliver these kind of projects both effectively and efficiently; more so than the NHS or other public agencies. This is because housing organisations have fewer competing priorities and are able to develop solutions directly for end users, in this case tenants.

The technology solution has to be driven by customer needs and wants, rather than technological or organisational priorities. This has resulted in Albyn being asked frequently if it would sell the product to private individuals.

The next step is to ascertain how quickly the technology used in the Fit Homes can be scaled up and retrofitted into any house in a variety of settings.

About Albyn Housing Society

www.albynhousing.org.uk

Albyn Housing Society Ltd. (Albyn) is a registered social landlord that owns and manages over 3,000 affordable rented homes in 60 communities across the Highlands. Albyn currently has around 70 employees spread between two offices, with its Head Office in Invergordon and a branch in Inverness.

For several years, Albyn has been working with national and local partners to develop innovative solutions aimed at supporting people to live well in their communities following significant changes in health and mobility. These initiatives have become focused around the development of 'Fit Homes', which are designed to provide a sustainable, replicable solution to high profile health and social care challenges, as well as a test bed for digital solutions that can be replicated at scale in existing homes.

Contact

For further information, please contact:

Graeme Hamilton, Innovation Officer, Albyn Enterprises

Tel: 01349 855 979
Email: graeme.hamilton@albyn-enterprises.co.uk