„Living independently in a secure environment.“

Pflege@Quartier – Guaranteed care in the neighbourhood

In the period 2015 to 2018, under the direction of a GESOBAU project team, partners from the healthcare industry, nursing industry and nursing science sector joined forces with telematics experts to work on the implementation the project concept. In contrast to many other AAL projects, "Pflege@Quartier" focuses on the perspective of the user and hence on the customisation of solutions, combining participation and human needs with mechanisation and digitalisation processes. Funded by the GKV umbrella organisation, the concept was developed in conjunction with the residents and is thus specifically aligned with the requirements of senior citizens in need of care. In terms of fittings, the project intentionally focused on affordable, user-friendly and low-threshold technological solutions that give older residents access to technological daily living aids and prevent potential dangers (falls, forgetfulness, loneliness). In 2017, 30 flats occupied by GESOBAU tenants aged 65 and above (some in receipt of long-term care) were equipped with technological solutions which the project participants will be testing over the coming months and years.

Status quo, problem statement, challenges

90 percent of our tenants would like to live autonomously and independently there in their own home when they get older. In 2014, this aspiration led to the question how best to combine the life situation of elderly residents and those in need of care with the modernisation of the Märkisches Viertel housing estate, current neighbourhood approaches and the growing digitalisation of our lives. This is where the "Pflege@Quartier" project, a showcase project in Berlin's Märkisches Viertel neighbourhood that commenced in 2015, comes in.

In conjunction with AOK Nordost and funded by GKV (until 31 January 2018), GESOBAU intends to ascertain – even beyond the 2018 project period – whether and in what manner modern technology can contribute to the preservation of mobility and cognitive skills to ensure that older residents can stay in their own home even if they require rising levels of care.

The "Pflege@Quartier" project focuses on the perspective of the user and hence on the customisation of solutions, combining participation and human needs with mechanisation and digitalisation processes. "Pflege@Quartier" was developed in conjunction with the tenants (aged 65 and above, some in receipt of long-term care) and is thus specifically aligned with the requirements of senior citizens.
 Numerous aspects were considered, including requirements applying to technology and quality, specific personal and care-related needs, social activities and access and innovation barriers. In terms of fittings, the project specifically focused on affordable, user-friendly solutions that give older residents access to technological daily living aids and prevent potential dangers (falls, forgetfulness, loneliness).

During the project period 2015 - 2018, 30 flats were fitted out according to the methodological and scientific concept that had been developed. Since May 2017, the fittings have been tested in the "Pflege@Quartier" show flat and have also been installed in 30 other flats on the Märkisches Viertel estate.

Project implementation

The Pflege@Quartier pilot project tested, and is still testing, the functional and systemic implementation of new living and care concepts. Numerous aspects are being considered, including the requirements applying to technology and quality, specific personal and care-related needs and social activities as well as access and innovation barriers. The research done by a competence team and their elderly test persons also focuses on the coordination of activities by service centres or nursing services with relatives and other support persons. This included relatives as well as AOK Nordost, professional nursing services, neighbourhood assistance organisations, neighbourhood management, etc.

The basic fittings were chosen to both provide help to senior citizens and offer added comfort to potential subsequent tenants of any age group. Installation of the basic package raises the value of the respective flats. The basic fittings in the rented flats include all aids that are beneficial and helpful for virtually all residents. Although these aids primarily relate to the project scenario, which focusses on senior citizens in need of long-term care, most of the aids can also be of benefit to people of other age groups. Children, in particular, can also make good use of shower rails that double as handholds, or of glued-on light switches which grow with the child.
 A distinction is made between two groups of fittings • structural-mechanical aids and • technological aids. Principally, the purpose of the basic fittings in the rented flats is to make the environment safer and the residents' life more simple. Interviews with the tenants identified the areas where such aids are needed.

The answers indicated a need for combined technological and traditional mechanical aids. Technological aids: *escos automation GmbH* was commissioned to implement the project. The supplier had to fulfill the following conditions: Inoperability, German-based data collector, retrofitting capability, modular structure.

In terms of technology, the project uses Ambient Assisted Living (AAL) approaches. Technical research is not part of the project. Instead, current technical solutions are combined with a neighbourhood concept in accordance with the application scenarios that were developed for the concept (living and utilisation scenarios for the very elderly, elderly users living alone, married couples with a partner in need of care). All radio components used in the basic installation can interact with each other. Third-party systems can also be integrated and can be employed in the home thanks to specialized additional packages (e.g. via gateways).

Brief introduction to escos Copilot

One of the objectives of the Pflege@Quartier project is to create "homes that look after their occupants". Such homes automatically detect emergency situations and defuse them – to some degree – independently (e.g. automatic cooker switch-off). However, in many areas (e.g. a fall) the homes depend on third-party human intervention.

escos Copilot is a technical solution consisting of modules that focus on emergency detection and the creation of a safe living environment. Thanks to its modular structure, the escos Copilot can be customised to the specific needs of the users.

Depending on the requirements, solutions involve safety modules, such as fall detection or orientation lights, comfort functions, for instance light control via tablet, and/or functions for improving social contact such as age-appropriate tablets.

In the area of emergency detection, human intervention is ensured via a link to a classic home emergency call centre. *In the project context, messages sent by the escos Copilot were connected to the Johanniter Unfallhilfe home emergency call centre.*

Modular structure/expandability

Based on rational application scenarios, the "Pflege@Quartier" project brings together various components that are available on the market. In this context, a central data platform is connected to the required sensors and actuators. Thanks to the modular structure and expandability of the concept, user-specific additional packages (freely selectable) can be offered in addition to the basic package.

Functions can be retrofitted in further expansion stages. *escos Copilot,* an open system, was chosen to account for the fact that technology develops on a continuous basis. We are constantly observing new solutions and products that are being developed and offered on the market and can be installed or applied in the rented flats (e.g. use of tablet PCs: health and exercise programmes or apps, virtual consultation hours at AOK-Nordost, online training offered by health insurances, GESOBAU tenant services, etc. Such external interfaces give residents the opportunity to maintain contact with the outside world).

Operability of the system

Since the system we installed in the homes is intended to support the residents' independent way of life as unobtrusively as possible, it has been configured such that only certain parts require "active operation" by the user. Components such as the "all off" switch, which switches the electricity off when the occupant leaves the flat or goes to bed, work with plastic cards similar to those used in hotels, or via toggle switches, as do switchable sockets. The project aimed to set the operability threshold as low as possible in order to increase acceptance among the target group which is still not very technology-oriented. The lighting control system in the homes can be individually programmed via an app; this requires a smart phone or a tablet. However, during installation it is also possible to program individual scenarios for specific uses (e.g. switching on lights from living room to bedroom at the push of one button) in cases where users do not want to deal with smart phones or other technology, or are not capable of doing so. Service chains, which involve the integration of relatives or a home emergency call service into the system, are defined together with the residents during installation.

Cost of the system

The system installation and provisioning costs depend to a large degree on the modules installed for and utilised by the resident. The extent to which investments would have to be borne by the housing association, funds, capital services and ultimately the users, etc. is currently being analysed in the course of the business model development. This specifically includes ascertaining the maximum cost that tenants or future users are able to pay.

As a municipal housing association focussing on the supply of homes to broad sections of the population, GESOBAU AG concentrates specifically on low-income households.

Agreements concluded with the project participants

Agreements regarding a minimum term were not concluded with the project participants. Neither should the subsequent business model include any restrictions in this respect. GESOBAU has funded the analogue and technological fittings and has made them available to the participants free of charge. The fittings will not be removed upon expiry of the project. Maintenance and support expenses are borne by GESOBAU AG.

"Pflege@Quartier" show flat

On 2 May 2017, GESOBAU AG opened the "Pflege@Quartier" show flat on the Märkisches Viertel housing estate to the public.
 The components installed in the show flat can be viewed and tested at any time. Both special requirements of potential new users and the user's requirements for his/her home can be addressed in this context. Viewings and consultations are offered free of charge. Since the opening, around 60 specialised groups and around 200 individuals have visited the show flats.

"A home that looks after me."

The "Pflege@Quartier" project from the participants' perspective

During the project term, 30 flats (with 44 tenants, average age 77) were equipped with analogue daily living aids and digitally-linked products. The tenants are availing themselves of the aids and products with great enthusiasm. The response of the residents of the converted homes probably represents the greatest success of the project. Thanks to the consistent involvement of the tenants and their individual problems, they have identified with the project and have made it their own. The residents stand by the project and stand for the project.

This response was not only observed in individual cases, but among the vast majority of participants in the project. It proves wrong all those who predicted a lack of acceptance, especially of the technical components.

Continuous monitoring of the tenants after the completion of the mechanical and technical installations also yielded interesting insights into the degree of assistance that had been achieved and the frequency of use of the individual system components. The automatic cooker warning and switch-off function, for instance, was activated much more frequently than assumed during installation. To reassure the tenants and their relatives, the frequent triggering of the cooker switch-off was communicated during the first feedback rounds, which subsequently gave this system component a much higher significance in the project than previously assumed. In many cases, higher safety levels lead to greater independence and hence higher self-esteem.

The regular **feedback meetings** with the project participants (every two months) are providing a key source of insights and information, not least from a scientific point of view, which will be incorporated into product developments and further projects. Pflege@Quartier is one of the few projects that involves a relevant number of tenants using technical and mechanical aids which are also integrated into a social neighbourhood concept. Aside from the previous feedback, future responses will provide further information about the benefits and needs the target group reports in respect of their own homes.

Fig. 1: Kick-off event with future project participants, June 2016

Residents' opinion on the use of technology

Inactivity detectors, fall detection, cooker safety, radio-controlled light switches, doorbell extensions and orientation lights turned out to be the most popular technology modules. The **home that looks after its occupant** automatically detects emergency situations and defuses them – to some degree – independently (e.g. automatic cooker switch-off, emergency call service chain linked to Johanniter-Unfall-Hilfe).

The favourite Copilot modules were:

- Inactivity detectors
- Fall detection
- Cooker safety
- Radio-controlled light switches
- Visual doorbell extensions
- Orientation lights

Over the course of the project, especially in the context of the module consulting sessions, it has become clear that the modular structure of the technical solution was very important to the participants. Although certain modules were used in the majority of the cases, a very colourful picture of technology requests sprang up around these modules which arose from the participants' needs and expectations.

On the other hand, the project also indicates a clear need for a well-defined range of functions. This need arises from the time spent on advising and training the participants to ensure flexible solutions, from very high training expenses for the trainer and from the fact that not all project participants can communicate such flexible solutions to interested parties, partners or potential further participants.

Generally, the retrofitting of the homes with sensors and actuators did not pose a particular challenge. Two electrical installation companies which were trained in the project context were able to carry out the installations independently after a short training period.

Cooperation with the provider of the home emergency call system (Johanniter Unfallhilfe): Emergency calls were connected by linking the escos Copilot to a classic home emergency call device at Johanniter Unfallhilfe. In this context, a training, installation and start-up process was developed, which resulted in negligible additional costs for the provider of the home emergency call system when the device was put into operation. A plan to continue this cooperation beyond the project term is in place.

Pflege@Quartier project – problem statement

The benefit of the project for the tenants, which consists primarily of an increase in objective and subjective safety and security, has been clearly demonstrated. The multiplication of such measures is indispensable in times of demographic change.

However, in the absence of project funds, the implementation of such measures in the daily operations of a housing association clearly represents a challenge. The conversion of the homes alone is therefore not enough. The tenants need contact persons to answer their questions and, if necessary, attend to the technical installations. Since a safer life in one's own home and the resultant longer stay also relieve health and nursing insurance institutions and the public sector of the burden of providing basic services, the costs should not be borne by the housing industry alone.

Pflege@Quartier project – opportunities

The collaboration between the housing industry, the social and nursing services and the tenants in the context of the Pflege@Quartier project in the Märkisches Viertel neighbourhood has set a ball rolling, which, to all participants, represents an improvement of the living environment of the tenants concerned.

Interdisciplinarity is a key innovation driver in the project context: Interaction between the housing industry, technology, science, tenants, the social, nursing and healthcare sector, relatives and many others has made a significant contribution to the development of solutions and programmes which will benefit society as a whole.

Now, we face the challenge and opportunity to hold on to the current momentum and maintaining it beyond the end of the project. The enthusiasm, joy and gratitude of the tenants involved in the project clearly shows that the Pflege@Quartier project closes a gap in the care situation of elderly people who live in their own homes, and want to continue living as independently as possible, despite illnesses and care requirements.

A unique feature of the "Pflege@Quartier" concept is its linking of AAL technology with the neighbourhood network and use of the network's local services. This facilitates the establishment of service and emergency chains and processes that allow people in need of care to remain in their own homes. Another key aspect of "Pflege@Quartier" concept, which is also very rare among other projects, is its focus on the perspective of the user and hence on the customisation of solutions.

On top of this, a further unique feature is its implementation in the context of the current tenancy agreements, which involves no newly-built flats which are fitted out before occupancy, nor any evacuation of flats to allow for the installation of the required technology. Instead, the homes are fitted out without impairing the life of the tenants.

Should the project organisers succeed in maintaining the fundamentally positive attitude of the participants beyond the test phase and substantiate this favourable response in the context of a subsequent evaluation, Pflege@Quartier could become a beacon project in the field of AAL. It could serve as an example of the successful generation of acceptance.

"Pflege@Quartier" – further development

Once the pilot project status has expired, "Pflege@Quartier" has the potential to be of much greater significance in the future: As a residential and neighbourhood concept, "Pflege@Quartier" is set to expand needs-based housing provision at GESOBAU, raise awareness and acceptance of digital aids and assistive systems, advance existing services, and much more besides.

GESOBAU will extend the "Pflege@Quartier" project beyond the funding period in order to sustain the fundamentally positive attitude beyond the test phase and integrate it into its housing provision by offering homes which adapt to their occupants' needs as they get older. **Awards**

- Telematik Award 2017
- Smart Home Award 2018
- Köpfe der Immobilienwirtschaft 2018

These awards underline the relevance and innovative approach of the "Pflege@Quartier" project. Aside from reflecting the attention the project has drawn in the industry, the awards also act as encouragement for other companies to carry out similar projects and as a key instrument in demonstrating to a significant group of tenants that their concerns are taken seriously.

"This is where I want to stay!"

"Pflege@Quartier": Neighbourhood concept

The way people age depends to a large degree on their local living conditions. On top of personal care services, people with mental-cognitive or physical disabilities need an individual, dynamically adaptable "assistance mix" as well as professional and voluntary support and household-related services.

A supportive social infrastructure and/or effective social relationships play a decisive role in helping seniors live independently in the neighbourhood for the maximum length of time. Relatives and friends are particularly important in this context. Neighbourhoods also offer opportunities for contacts and encounters which can develop into social networks with significant assistance and support potential. Aside from personal assistance, it is also important that the immediate environment features doctors, pharmacies, shops and public transport.

The development of neighbourhood concepts depends to a large degree on the availability of special contacts who personally look after the concerns of the neighbourhood. Märkisches Viertel has had an information centre for senior citizens (Senioren-Infothek Märkisches Viertel) as well as the "Nachbar hilft Nachbar" neighbourhood initiative since 2013. Now a new contact point for older people has been added to these services. The "Pflege@Quartier" service point, which was established and funded by the GKV umbrella organisation during the project term (July 2015 to January 2018), became the "Alter und Technik" (age and technology) drop-in centre in 2018 (financed by GESOBAU AG and Netzwerk Märkisches Viertel e.V.).

Numerous technologies and services are already available to help older people lead independent lives and hence absorb these changes, at least to some degree. However, knowledge of such support options is so far rather limited among the target groups.

Functions of the "Alter und Technik" drop-in centre

1. Testing and advancement of the "Pflege@Quartier" residential concept
2. Raising acceptance of technical aids to prolong independent living in one's own home
3. Adding technical expertise to existing advice services
4. Maintaining the opening times at the "Pflege@Quartier" show flat
5. Exchange with seniors on all questions surrounding the subject of "age and technology" using a variety of methods (workshops, info events, C@fé)

In conjunction with GESOBAU ("Pflege@Quartier" team), the functions of the drop-in centre will be performed by Pflegestützpunkt Reinickendorf and Senioren-Infothek Märkisches Viertel (supported by Netzwerk Märkisches Viertel e.V.) as of 2019.
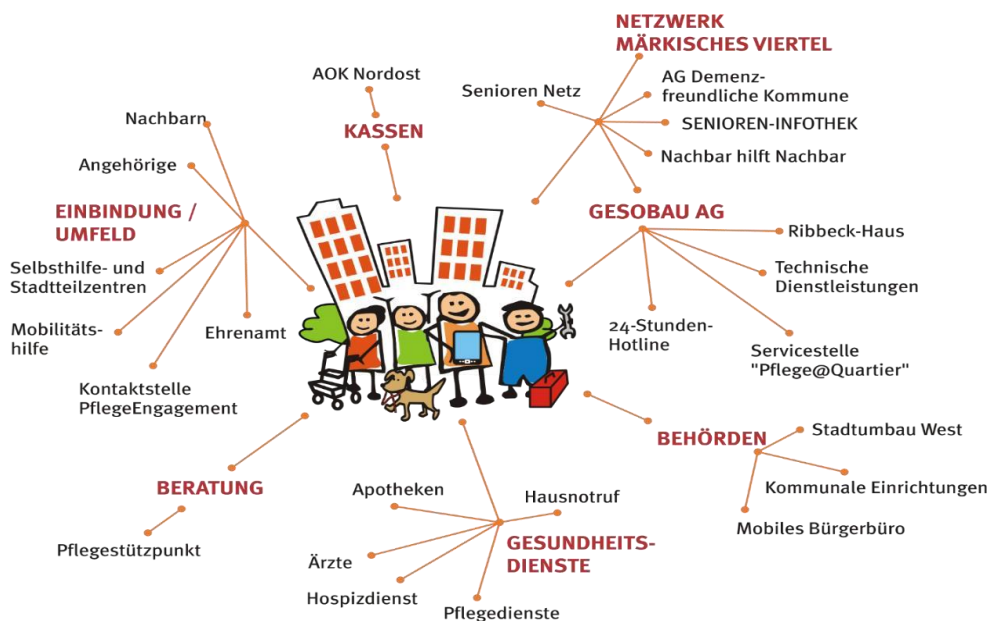
Fig. 2: *Home, health, safety, communication – neighbourhood network at Märkisches Viertel*

With the establishment of a centre providing advice on technical assistance for independent living, GESOBAU and Netzwerk MV e.V. are now developing the "Pflege@Quartier" project further and incorporating the experience of elderly residents and/or project participants by providing a drop-in centre that offers assistance and support in all questions surrounding daily technology needs.

Supplementary project: "Digital mobil im Alter" (digital mobility for seniors)

Establishment of a digital infrastructure: www.seniorennetz.berlin

In 2017, a support project entitled "SeniorenNetz Märkisches Viertel" (Märkisches Viertel seniors network) was launched to help elderly people come to grips with digitalisation. Tablet PCs were bought and a training programme was set up under the name of **Cyberseniors**.

Developed in conjunction with senior citizens, the age-friendly digital infrastructure aims to boost media competence among older people and promote exchange between the generations. The project combines various approaches under the term "Digital mobil im Märkischen Viertel".

In the context of the project, tablet PCs were purchased and a seniors training programme has been offered at the tenants' meeting point at Ribbeck-Haus on a weekly basis since January. The project aims to train older people in the independent use of all Internet-enabled devices such as smart phones and tablet PCs as well as providing knowledge and promoting the use, with a little support, of functions such as e-mail, Google search, Skype, Facebook and other applications that may be interesting and useful to them. A further pillar of the SeniorenNetz network consists of the www.seniorennetz.berlin website. The website provides an overview of various topics, locations in the neighbourhood and the surrounding area and current events. Seniors who do not have any Internet at home can seek advice at supervised contact points, consisting of mobile steles with integrated tablets and printers which allow seniors to obtain information online and try out new technology.

As experts in all matters regarding their own life situation, senior citizens were actively involved in the project. The aim was to jointly set up a multimedia support network in the Märkisches Viertel neighbourhood, boost older people's confidence in the field of technology, motivate them to use virtual services, lower barriers to entry and strengthen media competence.

Via collaboration with local senior citizens, neighbourhood networks, neighbourhood and tenant advisory committees, local district players and schools as well as the local authority, administration, universities, parishes and the local housing association, the project brought together existing "analogue" services and the areas where "digital" action is required. The project intends to improve contact between seniors and digital society and establish sustainable structures in the local district that provide age- and generation-friendly infrastructure.

***Fig. 3**: SeniorenNetz Märkisches Viertel workshops/ Presentation of "Mobile Steles"*

Background: Märkisches Viertel

3,2 km²

~ 17.500 Wohnungen

~15.200 Wohnungen im Bestand der GESOBAU

~ 37.000 EW

~ 8.500 EW 65 plus

117 Nationen

Designed in the 1960s for a population of 40,000, the Märkisches Viertel neighbourhood acted as a showcase for contemporary urban development. It was built in twelve years. Notable architects set different highlights with height-staggered buildings with up to 18 floors. The large-scale housing estate consists of approx. 16,000 flats of various sizes ranging from 40 m² to 110 m². GESOBAU, which holds over 15,000 flats on the estate, is the principal owner. In the period 2008 to 2015, the housing association invested approx. EUR 560 million in the energy-efficient conversion of the great majority of the buildings.

The model area has a population of approx. 37,000. At present, 25% of the residents are above the age of 65. The estate offers a number of benefits for this group: small flats, low-barrier design of public spaces and buildings, GESOBAU's low-barrier adaptation of existing buildings and excellent public transport connections. Further characteristics include the spatial concentration of public functions and large green areas which invite the residents to engage in physical activities. Today, easy access to a variety of social and cultural facilities is an important argument in favour of Märkisches Viertel as a residential location. Even residents with reduced mobility can cope well within a limited radius of action.

Awards received by „SeniorenNetz Märkisches Viertel"

- Goldener Internet Preis 2017 (Ältere unterstützen Ältere) (seniors helping seniors)
- BBU ZukunftsAward 2018   (special distinction)
- "Ort der guten Nachbarschaft" (Netzwerk Nachbarschaft)