



# MODULE 1

INTRODUCTION TO AGE-FRIENDLY  
AND INCLUSIVE ENVIRONMENTS

## UNIT

# 1

FROM DEMOGRAPHIC AND CLIMATE CHANGE  
TO HOLISTIC ENVIRONMENTS - THE WHO AND  
SHAPE MODELS

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# DESIRE

## DESIGN FOR ALL METHODS TO CREATE AGE-FRIENDLY HOUSING

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DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



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## INTRODUCTION TO AGE-FRIENDLY AND INCLUSIVE ENVIRONMENTS

This module aims to assist the building industry and furniture professionals to understand what is meant by “Age-Friendly”, how ageing impacts on daily life, and train staff with the skills to communicate effectively, identify accessibility issues and answer to different age and personal needs in the housing creation and retrofit. It aims to be an introduction to the DESIRE training course, presenting transversal

contents, such as some of the concepts that will be further developed in other modules.

In the beginning of each unit, you will find a short description of the main concepts to be elaborated further. If you are looking for more advanced contents or to deepen knowledge in some specific areas, please check the boxes “If you want to know more...”.

## UNIT 1 – FROM DEMOGRAPHIC AND CLIMATE CHANGE TO HOLISTIC ENVIRONMENTS – THE WHO AND SHAFE MODELS

In this unit, the policy and societal framework of ageing and climate change will be presented to set the scene towards the design and implementation of age-friendly environments, including outdoor spaces, housing and furniture

aspects. The **World Health Organisation** (WHO) model and the **Smart Healthy Age-Friendly Environments** (SHAFE) approach will be presented, and practical examples and practices shared and highlighted.

### 1.1 WHAT ARE AGE-FRIENDLY COMMUNITIES AND ENVIRONMENTS

Demographic change, in particular the ageing of the population, and climate change are important variables that must be considered by society as a whole, which must adapt to the challenges caused by these changes. It is therefore important to consider short- and long-term solutions to respond to such demands, where the construction and furniture professionals can have a key role.

During the early 2000s, organisations like the WHO and the European Union started to discuss the need to create cities and communities more adapted to older adults. In order to achieve that goal, it was necessary to intervene to improve

social and physical environments (Buffel et al., 2019). In 2006, the WHO launched the “Global Age-friendly Cities” project (WHO, 2007a), and as a result of various focus groups in 33 cities, it was possible to define what should be an age-friendly city: a city that encourage “active ageing by optimising opportunities for health, participation and security in order to enhance quality of life as people age” (WHO, 2007a, p.1).

Now we invite you to learn more about the concepts underlying Age-Friendly Environments.

## IN A NUTSHELL

**Health** is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2020, p. 1).

**Well-being** is a multidimensional concept that integrates mental well-being, emotional well-being, physical well-being and social well-being (WHO, 2012).

**Ageing** is determined and influenced by different factors: gender, culture, economic determinants, social and health services available, behaviour, social, physical and personal determinants.

The **environment** in which a person lives determines the way (s)he grows and adjust to the loss of some functions that is inherent to the ageing process.

**Healthy Ageing** is “the process of developing and maintaining the functional ability that enables well-being in older age” (WHO, 2019, p. 1).

An **age-friendly city and community** is one in which policies, services, and structures related to the physical and social environment are designed to support and enable people to “age actively” – that is, to live in security, enjoy good health, and continue to participate fully in society (WHO, 2007b).

To achieve this kind of community, all the stakeholders, including building and furnishing industries must be engaged, and must count with older adults in a co-creation process.

Demographic change has an impact on climate change, and vice-versa; both lead to demands on the future of cities and communities.

The response to this challenge depends on the context of each region. For instance, in a region where the population is declining, it is possible to create and expand green corridors in places where once there were only spaces of construction.

Besides biomedical health and social support, there are other areas that must be considered when the aim is to create an age-friendly community: Housing; Transport and accessibility; Outdoor spaces and buildings; Community support and health services; Communication and information; Civic participation and employment; Respect and social inclusion; and Social participation.

These domains are interdependent.

## 1.1.1 Healthy living and well-being

According to the WHO (2020), health “is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). This definition is consistent with the biopsychosocial model of health, that integrates physiological, psychological and social factors and the interaction between them to measure health. The WHO definition of health explicitly links health and well-being, so it is possible to understand that these two concepts are somehow connected, and we possibly cannot achieve one without the other.

The WHO also proposed a definition for well-being, stating that is a concept with two dimensions: subjective and objective; and comprises an individual's experience of their life, as well as a comparison of life circumstances with social norms and values. Well-being is a multidimensional concept that integrates mental well-being, emotional well-being, physical well-being and social well-being (WHO, 2012).

Some studies show that well-being is associated with factors such as self-perceived health, longevity, healthy behaviours, mental and physical illness, social connectedness, productivity and physical and social environment (Diener & Seligman, 2004; Lyubomirsky et al., 2005).

Active ageing is connected to a healthy life. This first concept was developed during the United Nations' Year of Older People, in 1999. Active ageing occurs when the person can continue to participate in all spheres of life, regardless of his/her age. Health and well-being affect the way each person ages and they are determined not only by genetic inheritance and personal characteristics, but also by the physical and social environment in which we live. Ageing is not a static variable and is influenced by several factors: gender, culture, economic determinants, social and health

services available, behaviour, social, physical and personal determinants (c.f., Figure 1), as stated by the WHO (2002).

The environment where we live impacts our physical and psychological capacity since we are born, and the way we adjust to loss of some functions and other forms of adversities that we experience during our life. When the interaction between the environment and the person is satisfactory, there are more chances to have a healthy ageing. According to the WHO, healthy ageing is “the process of developing and maintaining the functional ability that enables well-being in older age.” (WHO, 2019, p. 1).

In 2021, the European Commission adopted the Green Paper on Ageing that promotes a “life-course” approach to ageing, stating that we start ageing the moment we are born. In that report, the European Commission also states that, although healthy and active ageing are personal choices, they are strongly dependent of the environment in which we live, work, and socialize (European Commission, 2021).

This Green Paper also acknowledges that providing EU citizens with adequate digital skills to monitor their health status will increase their prospects to continue active as they age; but also, that there is the need to adopt housing solutions, age-friendly and smart homes to improve the health and safety of the older people living alone and empower them to continue with active and independent lives, as long as they wish. The same is also mentioned in the recently adopted Council Conclusions on Human Rights, Participation and Well-Being of Older Persons in the Era of Digitalisation (2020).

Healthy living is a concept focused mainly on the prevention of diseases and illnesses through the adoption of healthy lifestyles; in

other words, it is a way of living that lowers the risk of being seriously ill or dying early but it implies having the opportunity, capability and motivation to act in a way that positively affects physical and mental well-being (European Food Information Council, 2022). This goes beyond intrinsic factors and implies having resources, services and environments that support a healthy life.

However, a huge share of the building stock is not adapted to allow ageing in place. In addition, bringing new smart home solutions to market is still challenging because of the absence of a common EU market and economies of scale. Actions tackling these issues are needed to progress in the direction of active and healthy living.



Figure 1.1.1 Determinants of active aging, according to the WHO

## DO YOU WANT TO KNOW MORE ABOUT...

**Active ageing** is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (WHO, 2002, p. 12). This process is influenced by different factors, that are briefly detailed below.

**Culture determinants:** all the persons and populations are immersed in cultures that are responsible for sharing norms, rules, traditions and ways of thinking. The culture determines the way a society looks to the ageing process and the older persons, so it influences all the determinants of active ageing. For example, cultural factors influence health-seeking behaviours (e.g., enhancing or not the adoption of behaviours such as smoking) (WHO, 2002).

**Gender determinants:** are a “lens” through which consider the appropriateness of policy options and how they affect the different genders. For example, the traditional role of women as caregivers of the family increases the susceptibility to serious diseases in later adulthood; on the other hand, men are more prone to engage risk behaviours that could lead to illness and death (WHO, 2002).

**Social determinants:** the conditions in which people are born, grow, work, live and age, and the broader set of forces and systems (political, economic and social) that shape the conditions of daily life. The social environment plays a fundamental role in physical and mental capacity throughout life, being indispensable in determining how a person adjusts to the loss of some functions that is inherent to the ageing process (WHO, 2002).

**Economic determinants:** income, work and social protection are strong determinants of active ageing. The income can determine the access to nutritious food, adequate

household or good health care. Social security measures in Europe can include pensions, compulsory saving funds, insurance programmes, etc., Nowadays, there is a multi-pillared approach that mixes funding from the state with private support (WHO, 2002).

**Behavioural and personal determinants:** in all stages of life, it is possible to engage in healthiest behaviours that can lead to a more successful ageing. Stop smoking, starting physical activity or eat healthier food are some behaviours that could lead to increased active living (Centers for Disease Control and Prevention, 2021).

For many diseases, genes may be the cause; but the environment is usually the precipitating factor; this means that a person cannot change genes but can change their behaviour in order to prevent the genes to cause the disease (WHO, 2002).

**Health and social services:** the health system is a determinant of active ageing, and to promote it, a perspective of health promotion must be adopted, not only with disease prevention campaigns but also by promoting equitable access to primary health care and long-term care (WHO, 2002). This means that all people, of all ages, should have access to all the health services they need.

**Physical environments:** can determine the independence or dependence of a person. If the environment has many barriers or is not safe, it is less likely that older people leave their houses and, therefore, have less functional capacity, more mobility problems, being more exposed to social isolation and emotional disturbances (WHO, 2002).



## 1.1.2 The importance of context – inclusive communities for all ages

The community context and resources are of utmost importance in the ageing process. The WHO “Healthy Cities” approach “recognizes the determinants of health and the need to work collaboratively between public, private, voluntary and community-sector organizations”. Through political, strategic and technical support, as well as capacity building, the WHO intends to engage the communities and societies in order to achieve change for the better, tackling inequalities and promoting good governance and leadership for health and well-being (WHO, 2015).

A healthy city expands the community resources enabling people to mutually support in all the functions of life and developing to their maximum potential (WHO, 2015). Also, it is committed to health and to continually create and improve its physical and social environments.

Although most of the age-friendly initiatives focus primarily on urban environments, the guidelines and principles they promote are widely applicable in any community environment. Regarding the rural areas, the need of improving of physical environment is particularly acute. Older adults and caregivers from rural and remote areas consider accessibility as one of the most important traits of their communities and this often fails (e.g. lack of sidewalks, walkways and ramps on the public road, increased isolation and greater distance from health, banking and administrative services) (van Hoof et al., 2018).

A key strategy to facilitate the inclusion of older people is the adjustment of their environment to their needs. An age-friendly environment allows people, regardless of their

age, to actively participate in the community and be treated with dignity, facilitating intergenerational connection. On the other hand, it helps people to stay healthy and active throughout the ageing process, offering adequate support to those who can no longer take care of themselves (Dantas et al., 2020).

In Europe, considered as the most aged continent of the world, the concept of age-friendly environment is of great interest. However, a huge share of the building stock is not adapted to allow ageing in place and many older adults are living in inadequate housing, but unable to fund the improvements needed (Marley, 2015).

Build age-friendly cities and environments requires the coordination of different policy and service areas to strengthen each other, a work that has been developed under the Smart Healthy Age-Friendly Environments (SHAFE) a Stakeholders Network approved by the European Commission in 2018. Meaningful change can only be achieved by listening to those concerned and thinking beyond the “silo” of each sector. A central aspect of this approach is to create a participatory process in collaboration with older people, third sector organisations, and citizens in general (Dantas & van Staaldunin, 2020).

People know what they need and therefore must be at the heart of any effort to create a more adapted community. A participatory approach to research, planning, implementation, monitoring and evaluation of initiatives is the best safeguard to make each community a better place to live (van Staaldunin et al., 2020).

## 1.1.3 The 8 areas of Age-Friendly Environments

The WHO Age-friendly Cities framework is developed based on eight interconnected domains that can help to identify and address barriers to the well-being and participation of older adults in society. The domains are not independent; they overlap and interact between each other (WHO, 2007a).

They go beyond traditional biomedical health and social support approaches to a methodology that intervenes throughout the life cycle and addresses the different perspectives that have an impact on the environment around the person:

- Housing
- Transport and accessibility
- Outdoor spaces and buildings
- Community support and health services
- Communication and information
- Civic participation and employment
- Respect and social inclusion
- Social participation



Figure 1.1.2 Areas of an age-friendly city or community

A community that follows these guidelines will really be for all ages. It will design and adapt its natural environment for all citizens (e.g., accessible and safe road and transport infrastructure, barrier-free access to buildings, public rest and leisure places, adapted sanitary facilities). The information available will be adapted to different capacities and resources, integrated at the social, community and health levels, allowing people to maintain their health and autonomy longer. These services will also benefit younger generations, enhancing inclusion and participation.

The longer that older people manage to stay healthy, live in their own homes and own communities, and remain active in their economic and social life, the better the environment serves their well-being and quality of life. They remain vital contributors (e.g. as workers and consumers) and less time, money and effort are needed in social and health care provision through formal or informal channels. **Suitable living environments are one of the key elements that need to be in place to achieve such objectives**, including several domains such as buildings, outdoor spaces and mobility. The WHO also developed a Checklist of Essential Features of Age-friendly Cities where it is possible to see all the essential factors to an age-friendly environment (WHO, 2007b).

## DO YOU WANT TO KNOW MORE ABOUT...

According to WHO (2007b), there are eight aspects that need to be considered when planning an age-friendly community. Here you can know them in more detail.

### Community and health care

The community must have accessible and affordable care services, close to where older people live, as well as health and social workers trained to provide services specifically to this age group. Preventive care, geriatric clinics, adult day centres and residential care services located in residential areas allow older people to stay supported by their family and friends (WHO, 2007a).

### Transportation

The community transport system should be accessible and affordable. This will ensure that the older adults continue to be engaged with the community and more independent. The public transports should be perceived as safety and accommodate people with mobility needs. Education and training are also an important requirement for the drivers and station staff, in order to know how to deal with this age group. (WHO, 2007a). The roads, traffic and street lighting should be also a target of attention in an age-friendly community to maintain the confidence of the older drivers.

### Participation

Leisure, social, cultural and spiritual activities are key factors to maintain the participation of older adults in the community, reduce the isolation and depression risk. Therefore, an age-friendly community should guarantee different kinds of activities, made them affordable and in hours and spaces suitable for older adults. Activities that encourage intergenerational contact are mutually enlightening: seniors may transfer knowledge about traditions

and experiences of the past, and the younger may help them with technology and new practices (WHO, 2007a).

### Respect and social inclusion

An age-friendly community promotes the participation of older adults in social, civic and economic life. There are still many negative prejudices and discrimination connected to ageing (known as ageism). To tackle and reduce it, it is necessary to invest in education and promote intergenerational interactions (WHO, 2007a). Activities that consciously involve older adults enhance their self-esteem, make them more engage and valuable in the community.

### Civic Participation and Employment

Through voluntary, paid employment and participation in the political process, older adults, even after retirement, are an asset for an age-friendly community. Participation in these activities improves their satisfaction and maintains them socially engaged. The community should guarantee and publicise different opportunities, counting on diverse preferences, needs and skills. It is also needed to transform the urban space and transport infrastructure to ensure the accessibility of everyone.

Educating employers to see the benefits of giving opportunities of work to older people may reduce ageism in the workplace. Older adults have experience and expertise that can be used to improve the company (WHO, 2007a).

Also, older people must be involved in the decision-making processes. They should be invited to platforms or interest groups, or even motivated to create their own groups, making sure their voice is heard (WHO, 2007a).

### **Communication and information**

key part of an active ageing is staying connected with events, news and relevant information in time. The spread of Information and Communication Technology (ICT) like computers, cell phones or other similar resources can increase the social exclusion of the older adults who may not have sufficient digital literacy. For this reason, governments and organisations must ensure that information regarding policies and issues that directly affect older adults are available through the traditional print and broadcast media, and accessible to people that experience vision and hearing loss (WHO, 2007a).

Investing in community programs to improve digital literacy and computer training, adapted to older adults, can have an important role as it brings them closer to the community and fights technological exclusion (WHO, 2007a).

### **Outdoor Spaces and Buildings**

The external environment has a great impact on the independence and quality of life. An age-friendly community invests in recreational areas, safe pedestrian and building infrastructure to all. A clean environment, with low noise and pollution levels, green and safe places where older adults can easily arrive enhances social participation, physical activity and well-being in general. Buildings, pavements, walkways and pedestrian crossings must be retrofitted bearing in mind possible difficulties in locomotion or sensory capacities (WHO, 2007a).

### **Housing**

Housing conditions and the proximity to services are important factors that contribute to independence and active ageing. The older adults must be capable of doing their daily activities by themselves, feel safe and secure (WHO, 2007a).

## 1.2 SMART HEALTHY AGE-FRIENDLY ENVIRONMENTS

### IN A NUTSHELL

Smart Healthy Age-Friendly Environments (SHAFE) is a concept based on a holistic approach that aims to optimize social and physical environments, supported by digital tools and services that promote independent living, equity and active participation in society (Dantas et al., 2021).

It is necessary to engage citizens, communities and specific sectors like ICT, building industry, urban planning and also the health and social care sector (Dantas et al., 2021) to successfully implement this approach.

### 1.2.1 The SHAFE concept – holistic environments for all ages

Smart, adaptable and inclusive solutions can help to improve and support independent life throughout the course of life, regardless of a person's age, gender, disabilities, cultural background and personal choices. This idea was the baseline for the development of the Smart Healthy Age-Friendly Environments (SHAFE) concept, created in 2017 as a Thematic Network, approved by the European Commission in 2018 and consolidated as a steady movement after that, initially as a Stakeholders Network (Dantas et al., 2019) and most recently as a Foundation.

A holistic approach that optimizes social and physical environments, supported by digital tools and services, allows to provide better health and social care, promoting not only independent living, but also equity and active participation in society. This approach follows the United Nations Sustainable Development Goals – in particular Objectives 3 (Good health and well-being) and 11 (Sustainable cities and communities) – stating that sustainable environments for all ages represent the basis for ensuring a better future for the entire population and addressing most of the growing issues of the ageing population (Dantas et al., 2018).

SHAFE aims to foster awareness and support the creation and implementation of smart, healthy indoor and outdoor environments, for present and future generations, that will enable citizens to learn, grow up, work, socialise and enjoy a healthy life, by benefiting from the use of digital innovations, smart living and accessibility solutions and shared assistive models adaptable within the European setting (Dantas et al., 2021).

The challenges of different sectors, such as Information and Communications Technology (ICT), the building industry, urban planning and the health and social care domain, as well as those of citizens and their communities, are clearly interlinked. Responding to these challenges will foster awareness and support for the creation and implementation of smart, healthy and inclusive environments in the European context (van Staalduinen et al., 2021)

The community is the physical, social and cultural ecosystem closest to a person, built on relationships of trust, sharing, solidarity and intimacy, where each person finds social, cultural and identity references, socialise and live. The objective conditions of the environment

**NET4**  
Age-Friendly

## HEALTHY environments

Healthy environments support people to remain active and prevent from certain diseases. Healthy environments are safe and inviting, promote physical activity and participation in society.

**Healthy lifestyle**

Food, physical activity, moderate use of alcohol and tobacco, relaxation, good mental health support wellbeing and health

**Medicines and therapies**

Pharmaceutical treatment, physical activity therapy, rehabilitation, music therapy or trainings support recovery or life with a disease or impairment

**Caretaking**

Taking care of people who struggle with chronic diseases or impairments, such as dementia, Parkinson's disease, mobility problems, mental problems

Figure 1.1.3 Healthy environments

**NET4**  
Age-Friendly

## SMART environments

Digital or ICT applications are everywhere. For example: smartphones, internet and WIFI at home, streaming services, and digital watches. The devices and software need to be user-friendly designed, safe to use, supportive to citizens and offer reliable data handling.

**Smartphones and tablets**

Phones with iOS or Android or tablets provide many functionalities such as internet, data, social media, games.

**Smart home technology**

WIFI, home sensors, internet: comfort, health advice and monitoring, independent living support

**Outdoor smart technology**

Wearables, smart lighting, transport orientation aids, and many others support and promote an active lifestyle

Figure 1.1.4 Smart environments

(pollution, accessibility, mobility, safety, comfort) affect the quality of life and well-being of citizens, particularly in the context of climate change and thus affect the whole community circle (Dantas et al., 2021).

Thus, SHAFE fosters actions that promote partnerships between technological and digital innovation, architecture, urban planning, social

studies and health sciences to design and simulate communities of belonging that leverage on the potential of each sector to promote the existential dignity of all persons, regardless of their age, gender, health, social, educational, economic, cultural and identity conditions, as well as the levels of development of the region where they live (Dantas et al., 2018).

## 1.2.2 Responding to SHAFE challenges in housing

Demographic change is a concept used to describe a change in population size and structure, that can happen due to birth rates, death rates or migration (Max Planck Institute for Demographic Research, 2022). The decrease in the birth rate and increase in average life expectancy results in the ageing and shrinking of the European population. Demographic changes lead to very diverse demands for housing characteristics. Climate change and demographic change are two megatrends that need to be analysed together as there is great potential to adapt to climate change while building or retrofitting homes fit for older adults needs.

Every citizen has different needs and different ways of perceiving their home and immediate living environment. Modern living spaces are expected to be accessible, affordable, smart, energy efficient, safe, secure and comfortable. These characteristics are what help to turn a house into a home. For many, our homes and living environments have been transformed over the years: they have become greener, more efficient, safer and more automatized. However, the next step is to design or reconfigure them to be more versatile, easy to enter, easy to navigate (inside and around).

Europe needs a broad supply of responsive, smart age-friendly living environments and housing that will enable citizens, and in

particular older people and those who are frail, have impairments or disabling illnesses, to continue to live in their own homes or to move to other suitable (non-residential) housing. A responsive, smart age-friendly home shall meet the changing needs of its occupants across their lifetime.

For a growing number of older people, the current housing stock and other building facilities are no longer fit to meet the requirements for continued independent living. Investments in housing and in smart living solutions by construction and IT companies, homeowners and households themselves, are needed urgently to upgrade the current housing stock into appropriate smart living environments for ageing well. The needs of remote monitoring, using mHealth applications and robotics, are also rapidly increasing, which needs to be considered in planning age-friendly homes or environments.

Despite the huge evolution over the last decades, there is still no clear consensus and understanding of what are good practices in the design of smart or responsive spaces, with several concepts and terms referring to the same or similar situation, such as age-friendly city, community, housing, environment, lifelong housing, senior-friendly space, smart homes, and living environments. They all imply that older adults or those with lower

functional abilities are able to live at home, if duly supported by an environment that includes the needed services, technology, and infrastructure. If these environments are well-thought of, also those with lower income levels can afford the comfort of home across life stages (Velikov & Thün, 2013).

The definition of a “Smart” Building foresees a holistic and integrated design: “Smart Buildings are buildings which integrate and account for intelligence, enterprise, control, and materials and construction as an entire building system, with adaptability, not reactivity, at the core, in order to meet the drivers for building progression: energy and efficiency, longevity, and comfort and satisfaction. The increased amount of information available from this wider range of sources will allow these systems to become adaptable and enable a Smart Building to prepare itself for context and change over all timescales” (Buckman et al., 2014, p. 98).

A “responsive” environment, is interactive, adaptive and represents “how natural and artificial systems can interact and adapt” (Lee et al., 2002), including functionalities and performance characteristics similar to those of an “intelligent” building: e.g. real-time sensing, climate-adaptive elements, smart e-health devices, automation and the ability for user override, as well as interactive characteristics, such as computational algorithms that allow the building system to self-adjust and learn over time, e.g. to control environmental conditions, comfort, security and energy consumption (Beesley et al., 2006; Cole & Brown, 2009).

This smart age-friendly living environment foresees:

1. Inclusion of ICT for increasing user-autonomy, user-comfort and energy efficiency;
2. Inclusion of building and interior design features according to Design for All (D4All) standards;
3. Mutability of environment so that individuals with different habits and needs find comfort in it.

Responsive houses react to user needs and behavioural changes to increase comfort, safety and well-being of users. According to Atkin (1998), buildings should “know what's happening inside and immediately outside”; “decide the most efficient way of providing a convenient, comfortable and productive environment for the occupants”; and “respond quickly to occupants” requests, being almost a humanised system, which senses, adapts and reacts to human challenges.

It also needs to be part of the community, considering ICT, accessibility issues and offer potential for greater engagement, inclusion and privacy. In order for a home to be compliant to the changing needs of a growing ageing population with different abilities, backgrounds and requirements, such a responsive age-friendly environment must include ICT, be energy efficient and safe and also incorporate D4All features in terms of accessibility, usability and affordability.

Design for All is a tool and an approach which aims to ensure equal opportunities for all to participate in all spheres of society. “To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity” (European Institute for Design and Disability, 2004, p. 1). D4All is an approach that integrates the characteristics of the user in the building environment and also aims to guarantee the environmental sustainability and economic viability of the design (Prestamburgo et al., 2019).

Finally, it must answer to the challenges of social inclusion and the context of the neighbourhood and community it is included in, offering opportunities for increased participation, e.g., with public services, workplaces and educational institutions or mobility solutions.



These premisses are applicable to all types of property. New properties will have to answer to the needs of the population by providing a set of minimal adaptable, accessible in accordance with privacy and the EU General Data Protection Regulations (GDPR) (European Union Regulation 2016/679).

In terms of the existing housing stock, the majority of already built properties across Europe have other issues to be addressed, namely through building adaptations, but also through the integration of ICT, that can

be explored by the user, according to financial affordability, feasibility, needs and personal choices.

People want to be in control of their own lives, their own environments and their own future so they can continue living independently, despite the loss of intrinsic and functional capacities and abilities, despite their economic and social positioning (Decorme et al., 2020) and this is why a SHAFE approach is needed, connecting ICT, the building, the resident and the environment in a meaningful way.

### DO YOU WANT TO KNOW MORE ABOUT...

The first smart buildings appeared in the late 1960s. They were commercial spaces that utilised “building automation systems” which focused on labour saving and energy conservation issues. Energy saving is a relevant societal and environmental topic, that also refers to health and quality of the indoor environment. In different European countries, the quality of heating or cooling systems in many houses is a significant issue in terms of costs, efficiency and availability of energy for the technical systems. By the mid-1980s these concerns had moved from the workplace to places of residence, and home automation was moving from being a high-tech hobby into a more mainstream

activity. The focus of home automation subsequently shifted towards ambient assistance to provide comfort and care for all homeowners, particularly vulnerable residents.

Housing must be planned in a way that allow a positive user experience, to with this in mind, the European Innovation Partnership on Active and Healthy Ageing (EIPonAHA) and its Action Group C2 on interoperable independent living solutions developed a guide with recommendations that manufacturers and developers of Active and Healthy Ageing solutions (EIPonAHA, Action Group C2, 2018).

## 1.2.3 Best practices and examples of SHAFE

This section aims to present specific examples of SHAFE building solutions around Europe and was kindly provided by the project Homes4Life.

The Homes4Life project (2019–2021) was designed with the aim to provide better choices European citizens in regard to independent living at home and in the community, supported by the full range of digital opportunities, while promoting investments to update Europe's built environment.

Homes4Life addressed the existing barriers to boost investments in a smarter age-friendly building stock by developing and implementing a certification scheme, in close collaboration with end-users and relevant European R&I

initiatives. This scheme is ready for widespread adoption by a dedicated community of lead users and will provide guidance for public and private investors.

To showcase good examples of smart age-friendly buildings, that could be benchmarked and further adopted/upscaled across Europe, Homes4Life opened a call to existing practices that would represent a suitable typology for replication.

In the following pages these good examples are illustrated and links to available information on their features and business models are provided, with the aim to show in practice what SHAFE environments might be.



Figure 1.1.5 France | PÔLE INTERGÉNÉRATIONNEL DE NICE MÉRIDIA, CCAS DE NICE

[CLICK HERE to see](#) → [Business Case](#) → [Press article](#)



Figure 1.1.6 France | RÉSIDENCE KALIA, A2L SENIORS

[CLICK HERE to see](#) → [Business Case](#) → [Pilot website](#)



Figure 1.1.7 France | ALICE ET VICTOR VILLAGE SENIORS

[CLICK HERE to see](#) → [Pilot website](#)



Figure 1.1.8 Spain | ETXEGOKI, BIZKAIKO FORU ALDUNDIA – DIPUTACIÓN FORAL DE BIZKAIA

[CLICK HERE to see](#) → Business Case



Figure 1.1.10 Poland | U SIEBIE MIMO WIEKU WZORCOWE MIESZKANIE SENIORA, FUNDACJA MIMO WIEKU

[CLICK HERE to see](#) → Business Case



Figure 1.1.9 Spain | CIUDAD RESIDENCIAL BRISA DEL CANTÁBRICO, EL CAMINO, COOPERATIVA BRISA DEL CANTÁBRICO

[CLICK HERE to see](#) → Business Case



Figure 1.1.12 Italy | CASA S.M. MADDALENA – CASA MAZZINI – CASA DEL GRANO, CASA DEL CHIOSTRO, ISRAA TREVISO

[CLICK HERE to see](#) → Business Case (Casa del Chiostro) → Business Case (Casa S.M. Maddalena | Casa Mazzini | Casa del Grano)



Figure 1.1.13 Ireland | HOUSING WITH SUPPORTS, INCHICORE, DUBLIN 8, OBFA, CIRCLE VHA, ALONE

[CLICK HERE to see](#) → Business Case → Pilot website



Figure 1.1.14 The Netherlands | DE HOGWEYK, VIVIUM ZORGGROEP

[CLICK HERE to see → Business Case](#)



Figure 1.1.11 Poland | MULTIGENERATIONAL HOUSE IN LODZ / DOM WIELOPOKOLENIOWY W ŁODZI, CITY OF LODZ / MIASTO ŁÓDŹ

[CLICK HERE to see → Business Case](#)

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