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# **Aging bridage** - The win-win service system coping with the trend of aging society

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## ABSTRACT

For a long time, we have been accustomed to taking young people's needs as the driving direction for social construction. However, as everyone knows, the age structure of the population is undergoing an irreversible transformation. Under such circumstances, we need to think about whether a system formed around young people's needs, and serving them will adapt to the future? This article explores how to integrate the following aspects under this irreversible trend: how individuals, organizations, and society can establish a response to a new relationship between the elderly and society that is in line with contemporary or future conditions and introduces a win-win service platform based on multi-party relationships.

The entire service platform runs through the needs of the elderly like a thread. All services are developed around the needs of the elderly, passing the needs of the elderly to elementary school students, middle school students, and college students, and then to related professors and social institutions through students' support. In the process of delivering services, a new connection between the elderly and society is established. While solving the needs of the elderly, each service provider in this system also gets the experience, contacts, and rewards they need. . . Let the institutions in this system also obtain corresponding data and perspectives from different ages at the same time, and then feed these data back into the ever-changing social service system. Through this kind of service transformation, a new win-win or even multi-win service model will be established so that the elderly can participate and contribute to society's construction and establish a service system centered on the elderly.

The elderly ----- the main target of the future service model. They are sympathized or pitied by others for not adapting to contemporary social norms. No one asks: Who made these norms? Do these specifications belong to the future? For medical and physical reasons, the social positioning of the elderly is often pathological. But the elderly, as the young, have been the main output of social construction to support the smooth operation of society, and they have experienced situations that young people cannot imagine. All levels of society need to learn and impart the elderly's experience, and they need their own service system, which is the result of the social construction model. Therefore, I hope to set up a service system based on the needs of the elderly.

The service process is intensified one by one, according to the category of needs. The service personnel is also promoted level by level according to the support of different students -- teachers -- social institutions. The core of the entire service platform is delivery, win-win results, and equality. In the design process, I conducted many surveys and communications with the elderly group, and the service system is constantly improved and optimized in this process. This research tries to contribute to the relationship between the elderly and society.

## RECOGNITION

Within a few months of writing my graduation thesis, I went from being confused to finding the direction, then did research and summarized the concept of design. I am very grateful to my thesis supervisor, Professor Luca Fois, for his patient advice and support, which stimulated my interest in research and gave me more in-depth thinking.

Thanks to the resources and teachings I received during my studies at school. During the two years of study, I was really thinking about how to transform from a student to a designer.

I also want to thank the people I interviewed during the optimization design process, the users who did the product model testing for me, and the former contributors in this field.

Like a multi-meter domino, everyone on this route helped me to complete the design. I sincerely thank everyone who helped me. I hope I can continue to give back to the society as a designer and practice the social responsibility of a designer in the future .



## PREFACE

When I was a little child, my grandparents were taking care of me, because my parents were busy with work and didn't have much time to spend with me. In fact, this is a very common situation in China. After I went abroad to study, I found that this situation is very common even in the world. It's just that because of cultural differences, Chinese people do have a value that advocates self-sacrifice. Even on some levels, the Chinese may be the nation that is best at "sacrifice". Since ancient times, there has been a value that has influenced us: advocating sacrifice for children, confidants, virtuous monarchs, civilization, the dignity of a country. . . But to be honest, this is not just for the Chinese. Take my grandparents' generation as an example. When they were young, the education they received was to sacrifice for love, and they were used to sacrificing their own interests to contribute to others. They acquiesce that all they can do when they grow old is to look after their children and be busy around family members. . . It seems that this is the only way for them to play their residual warmth. This society also has become accustomed to this model, even when they are sympathized or pitied by others for not adapting to contemporary social norms. But no one asked: Who made these specifications? Are these specifications reasonable? Is it fair?

The aging of the world's population has brought us into an unknown demographic field. As we all know, one of the main contributions to the expected growth of the population is the extension of life expectancy: people live longer, so more elderly people will live here. This development reveals an interesting and important demographic change-citizens are getting old. So if an aging society is an inevitable trend, will our current social norms and social service systems adapt to the future?

This paper proposes a new type of service system that we can envision for the development trend of the future population structure. To tap the potential for cities and citizens under the circumstances that the absolute number of the aging population will increase, the proportion of the aging population will increase, the healthy life expectancy will be extended, and the number of working age population will be relatively reduced. Because of the changes brought about by the demographic structure, a society that serves the elderly is a society that serves everyone. Because the impact of population aging cannot be directly predicted. The aging population does bring some huge and fundamental new challenges, but they are not insurmountable. These changes have also brought some new opportunities because people live longer and healthier, work longer and have different abilities and needs.

In the first part of the study, I explored the similarities and differences between the elderly and contemporary young people from such aspects as brain nerves, social relations, potential needs and advantages. Then I analyze whether the current social service system conforms to the changes brought about by the demographic transition we will face in the future. What might these changes mean for business and economic performance? I also investigated the current main modes of contribution to society by the elderly, and tried to explore how to optimize this mode. Let the elderly exert their greater social value to establish a more equal social role and a more reasonable social division of labor.

In the process of research, when I was communicating with the elderly, I found that the empty nest elderly accounted for a large proportion of the urban elderly. The material needs of this

group of people have been basically met, but the needs of the psychological and emotional levels still lack corresponding products to meet. Even if the importance of the elderly is recognized in the current market, there are fewer targeted products than those for young people. There are few ways for institutions to collect effective, comprehensive, and quality data on the elderly. They need these data to support the development of research.

In addition, when I was investigating young people, I found that although many young people do not live with the elderly, they are willing to accompany the elderly. But because of time or economic factors, they cannot accompany the elderly at home. There are still some people who believe that many times even if young people and old people stay together, they want to communicate but do not know how to establish a form of communication. Moreover, in the contemporary social service system, another group that is easily neglected to contribute is the student group. They are regarded as the "served" by default. However, through research, I found that they have an advantage in communication that other age groups cannot match.

Therefore, I hope to establish a new type of social service system that will shift from targeting and driving the needs of young people to the needs of the elderly, and increase the contribution of student groups to the social service system. In this service system, the elderly can satisfy their needs while giving full play to their advantages; young people can obtain knowledge, experience, contacts, and remuneration. . . ; Relevant institutions obtain the required data and use these data to feed back to social construction.

In this vision, based on this model, I also discuss a new type of social relationship, in which the old and the young are linked not by blood but by a shifting relationship of advantages and needs. In this vision, based on this model, I also explored a new type of social relationship. The elderly and the young are not connected by blood, but are connected by the relationship of advantage and demand conversion. Starting from the urban elderly, I use both online and offline methods to operate the service system through progressive needs and services. Finally, when doing prototype testing, I hope to get more inspiration in the user testing part to promote the operation of this new and win-win service system in life.



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## CONTEXT

- Overview
- Global aging
- The brain and neuroscience of the elderly
- Mental health condition of the elderly
- Therapy to delay brain aging
- The social role of the elderly
- Social relations among the elderly
- Family systems theory
- Social exchange theory
- Win-win cooperation

## Overview

All kinds of reports about the aging of the population have been flooding our lives. We all know that the aging of the population is an inevitable trend for us. But in this trend, the changes we try to make to society are actually very small. People generally remain negative about aging, and the elderly are ignored in this concept.

This chapter outlines the impact of aging on individuals from the physical to the psychological. The first part explores the social perspective of aging, exploring the current definition of aging from current attitudes, policies, and personal factors. Subsequently, we searched for the causes of aging from both physical and psychological aspects, and compared the similarities and differences between the elderly and the young. Try to understand and delay aging methods.

Fortunately, not all the effects of aging are negative, and life and experience bring advantages that cannot be replicated to the elderly. It is a pity that I have not fully seen these advantages in the current social role played by the elderly. They are regarded as a disadvantaged group in the current society. So I studied the current social outlook of the elderly, including peers and the next generation. Then I comparatively studied the individual-centered family system theory, and explored the role of the elderly in family relations.

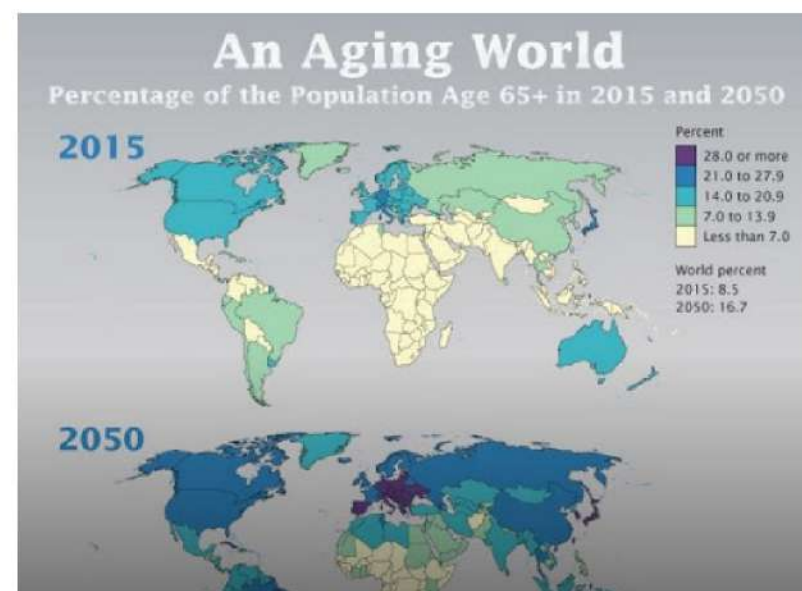
The study found that with the breakdown of the traditional joint family structure, young people and old people are being absorbed harmoniously with each other, and the family structure is steadily undergoing a process of disintegration and nuclearization. This absorbing relationship between the two is very similar to social exchange theory, which gave me the idea of using this relationship to build win-win cooperation.

## Global aging

From 2015 to 2050, the proportion of the global elderly is estimated to increase from 12% to 22%, almost doubling. In other words, this will prompt the population over 60 years old from 900 Million to 2 billion. This increase is due to a reduction in deaths from infectious diseases such as polio and measles and improvements in health-related habits, including smoking cessation and seat belt use. Positive changes in health care provide reasons for people to remain optimistic about life in later life.

However, more and more negative behaviors are shocking at the same time. Modern innovations such as fast food and resting life have led to poor diets and exercise interventions, and the incidence of chronic diseases such as diabetes has also increased. In addition to the significant increase in life expectancy, it is difficult to predict whether the main characteristics of life in old age are good health and function or increased disease and disability.

The social consequences of an aging population are uncertain. For example, the availability of retirement funds, skilled workers, and medical care costs in old age have received considerable attention.



*Fugura 1: An aging world*

However, there is no consensus on how these issues will develop over time. The pessimistic forecast shows that many older adults will impose an undue burden on the economy and society. More optimistic predictions indicate that the elderly will become an important source of support for young people, and they will continue to contribute to society in a meaningful way.

If we are lucky, all of us are moving towards old age. The elderly will face more special physical and mental health challenges, and we need to recognize this. Many things can be done to promote everyone's active aging, and many things are already being done; physical therapists and occupational therapists are actively involved in these tasks and ensure that everyone gets the best possible in future life. Great experience has made a great contribution.



**No Elderly**

... should waste their final years sitting around at home.  
Dear elderly, go out and have fun! Stay **active** and you'll be just...

**Fine**

*Fugura 2: Culture of active aging*



## Current attitudes

Current attitudes of social and cultural factors may affect the experience of getting older in several ways. First, the stereotype of aging has led to relatively common but increasingly subtle age discrimination. "Older people are often seen as people with lesser needs." This negative view, often called age discrimination, is somewhat ironic because we will eventually grow old, and we are discriminating against our future self.

The report says that 85% of adults over the age of 50 have experienced age discrimination, and a person's attitude towards aging has been found to predict mortality. Besides, studies have found that older people are more likely to internalize these negative stereotypes of aging. Older adults exposed to negative stereotypes have decreased memory, math, and handwriting tests, while self-induced dependence has increased, leading to learned helplessness.

Such negative stereotypes will harm the function and health of the elderly. This extends to care providers' perceptions of the elderly's ability to benefit from care. Negative perceptions will lead to insufficient care for the elderly, and they themselves cannot accept such "discriminatory" care. These findings suggest that healthcare providers must ensure that personal biases do not negatively affect interventions.



*Figura 3: A negative view of the elderly*

We need to be aware of avoiding the use of stereotyped or negative language, using words that more accurately describe cognitive aging, such as "change" and "difference", and if appropriate, "harvest", "decay" and "stability" "To describe the nature of these differences.

Fortunately, in the past few decades, there has been more research on aging as a positive phenomenon. Many studies have shown that most older people have made significant contributions to society and enjoy life simultaneously. This awareness has changed people's negative attitudes towards life in later life to a certain extent.

As the number of older adults increases, supporting them to maintain their functions and vitality will help reduce the pressure on society and health care institutions. The concept of successful aging has been elaborated and refined to focus on optimal aging, active aging, and other related structures (Fernandez-Ballesteros, 2011).



*Figura 4: successful aging*

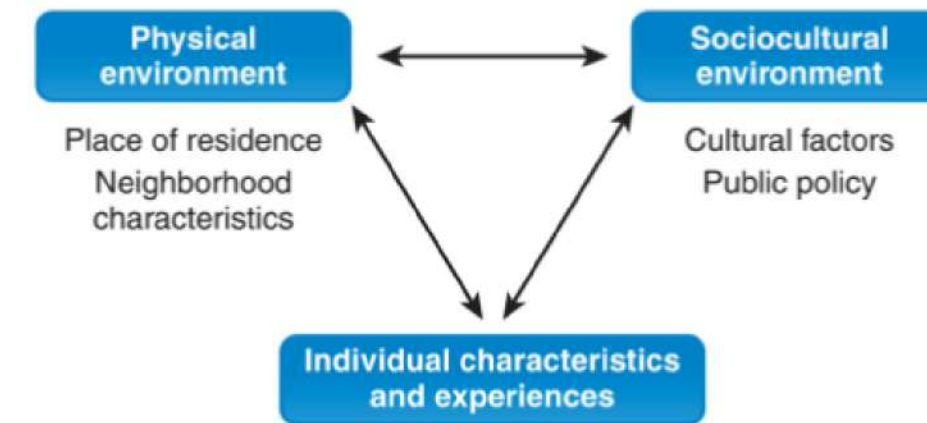


Successful aging is considered a multidimensional concept that encompasses and transcends health and comprises a wide range of biological, psychosocial factors. For example, researchers define it as the following components: low probability of diseases and related disabilities, high physical and psychological functions, and high social participation (Rowe & Khan, 1987 and 1997). Other authors emphasize that subjective evaluation and life satisfaction are key factors for successful aging (Lehr, 1982), while others believe that activity and productivity are key factors (Siegrist, Knesebeck, & Pollack, 2004). All in all, health status, optimal physiological function, high cognitive function, positive influence, and social participation are generally accepted (partially or fully) criteria for identifying this form of aging.

However, the idea of active aging may also lead to a different type of old age discrimination, which excludes those who are disabled or "just old and not well protected." It seems that the most effective strategy for portraying old life to ensure a positive outlook is to reflect a realistic but optimistic image, not to be completely optimistic. This reduces the likelihood that older people will experience age discrimination while undergoing normal age-related changes. Changes in the definition of aging and different understandings of the aging process have confused the expected roles, activities, and functional capabilities of the elderly.

People are paying more and more attention to the understanding of the social determinants of health, which can be directly linked to the experience of aging. Personal factors such as gender and personality, environmental factors such as physical environment and place of residence, social, cultural factors including economic environment, values and beliefs, and social concepts all affect a person's life in his later years. They also influence the beliefs and actions of health care providers when working with older people. Figure 4 shows how these factors interact.

Life expectancy itself does not define old age. When life expectancy is short, people are considered old age earlier than they are now. Taking the Shakespeare era as an example, old age is said to begin at 40. In contrast, when the United States enacted the "Social Security Act" in 1935, the "eligible" age-therefore, "old" is defined as 65 years old. Because more than half of the people in the United States will live into their 70s or 80s, there is now a discussion about whether old age will start later.



*Figura 5: Factors affecting the experience of aging*



## Public policy and aging

Public policies are derived from a specific society's cultural values and beliefs and have a significant impact on personal life. For example, retirement income and medical insurance are some of the issues closely related to legislation. Policies on pensions, investment, and medical care can greatly affect whether the elderly are financially safe enough in their later years. The policy can also support or hinder positive aging because it supports or hinders individual functions. Let us consider an example: financial support for the elderly.

In the United States, the social security system was established in the 1930s in response to the Great Depression. The system encourages senior citizens to retire and provides jobs for young people. Other forms of pensions became more common after World War II when the federal government-controlled wages to minimize the threat of large-scale irrigation. But now, American pensions are rapidly disappearing. Many developed countries, including the United Kingdom and Germany, face changes in the pension structure because of the rapid increase in the proportion of older adults in their populations.



*Figure 6: The American people want to strengthen the social security system*

At the same time, social security reduces poverty among the elderly. The recent focus on social security is the fact that the proportion of older people in the U.S. population relative to working-age individuals (usually defined as 22 to 65 years old) is increasing. Policy analysts believe that the dependency ratio—the ratio of the labor force to the children and the elderly who depend on workers for financial support—is expected to increase from 22 to 35 between 2010 and 2030. This may be an inaccurate calculation, because the Great Recession that began in 2008 caused many elderly people to choose to continue working. At this point in time, a result of the aggregation of these different factors is the huge economic uncertainty of the elderly. This is a particularly big problem because they do not have enough time to make up for investment losses or earn additional income.

Another problem that is often overlooked is homelessness. The number and proportion of elderly homeless people has increased, partly because of the long-term mental illness being sent to shelter, the reduction of social safety net programs, and the lack of family support. Survival must be the main focus of activity, and there is little time to care about "successful" aging. Few elderly people live in orphanages. In 2012, approximately 1.5 million elderly (3.6% of the population over 65) lived in nursing homes (AOA, 2012). The oldest elderly, women, and individuals without family support make up a disproportionate proportion of this group. About 11% of the population over the age of 85 live in long-term care.



## Personal characteristic

Simultaneously, in a particular group, experience and environment can cause considerable differences among the elderly. Groups in other countries have different experiences, which affect group values and behaviors. But individuals in a particular group may be very different from these stereotypes.

The experience of aging is unique to everyone. An individual's genetic characteristics, personality characteristics, and personal experiences throughout life are crucial to a person's future life environment, behavior, and attitude. It pointed out that "There are big differences between people in how physical and mental health changes with age. Some people stay healthy until old age, while others experience a sharp decline.

## Culture and aging

People's attitudes towards the elderly can be changed through the efforts of the education system. The personal experiences of older people in contrast to behavior and appearance and stereotypes also encourage people to re-examine negative beliefs. Older people need to find strategies to resist negative stereotypes. For example, by focusing on the positive aspects of yourself and your friends' lives, you can avoid negative opinions becoming self-fulfilling prophecies. Wise policymakers and care providers need to admit that older people are no less important or worthy of attention than younger people. Globally, there are some common factors in attitudes towards the elderly. At the same time, there are cultural differences. Understanding and acknowledging these differences can support the meaning of older people.



*Figura 7: older people are no less important or worthy of attention than younger people*

Culture may affect individuals' expectations of life in old age, their plans and goals at this stage, their values and attitudes towards aging and healthcare, and their motivation to participate in or withdraw from activities. In the United States, people are becoming more interested in cultural factors because more and more people are aware of serious health differences. Race and racial differences are related to morbidity, perceptions of health care, access to health care, and health care outcomes. For the elderly, the accumulation of disadvantages throughout their lives may exacerbate these gaps. The reasons for this difference are not yet clear, and there are various assumptions, ranging from genetic differences to socioeconomic and environmental factors to systemic discrimination.

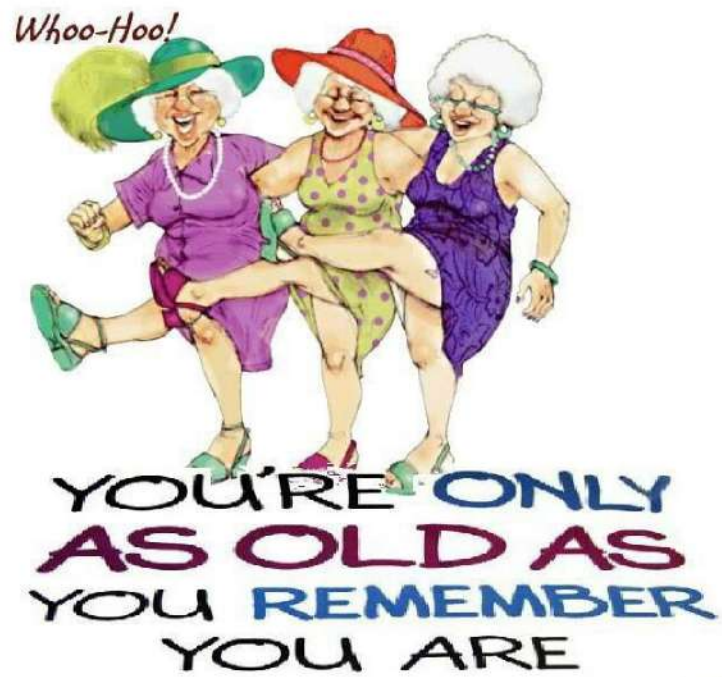


## Personal experience

Personal experience includes accumulated advantages or disadvantages due to differences in socioeconomic status and educational level. These differences will affect the health and outlook of later life. Stress and self-identity have a major impact on happiness in later life.

One factor considered to buffer genetic traits is personal personality and personal skills and abilities. Adaptability and emotional regulation contribute to happiness in later life, just as building a social network. Some studies have found that what is important is helping others, not simply from social networks. A positive outlook on life is always related to the happiness of old age. Positive self-esteem and optimistic expectations may influence the decision to seek help when difficulties arise.

Some older adults seem to grow old gracefully and regard old age as satisfaction. Others seemed pessimistic and gloomy. Recognizing and using personal strengths is an important strategy for providing interventions to improve older people's lives in later life.



*Figura 8: active aging attitude*

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## The brain and neuroscience of the elderly

### Aging of the brain and nerves

The central nervous system and peripheral nervous system constitute the human nervous system. The central nervous system is composed of the brain and spinal cord; the surrounding nervous system is the nerves throughout the body. The brain is composed of three main parts: forebrain, midbrain and hindbrain.

The brain contains information that basically makes us who we are: our wisdom, awareness, individuality, emotions, language and sensory abilities and mobility. Certain areas of the brain which is named lobes are responsible for processing these different types of function. The frontal, parietal, temporal and occipital are the main lobes.

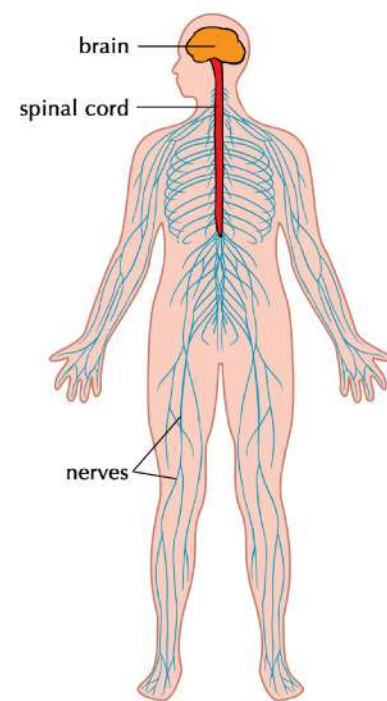


Figura 1: human nervous system

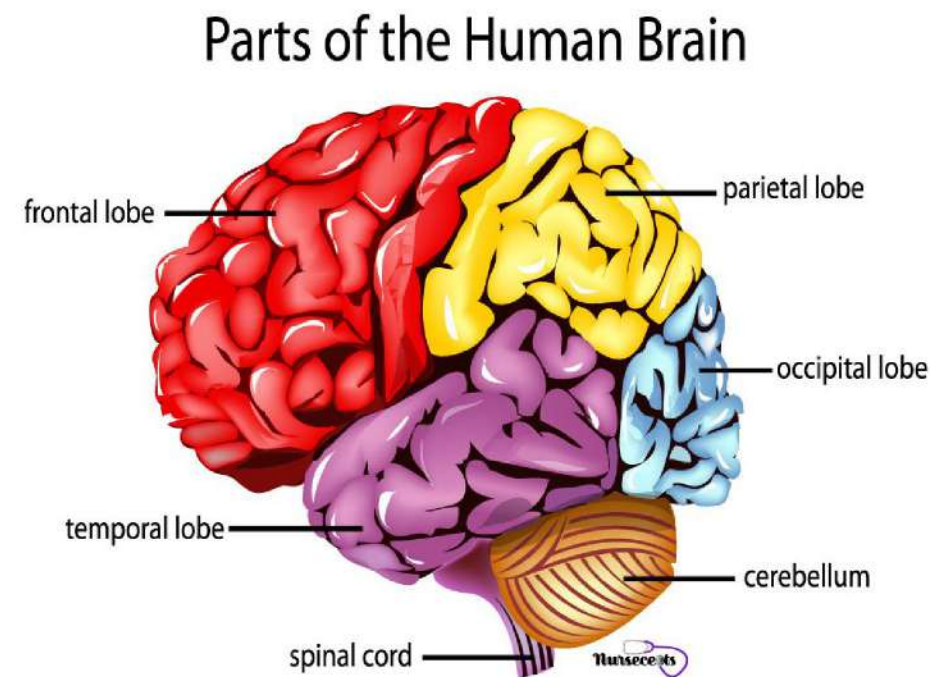


Figura 2: Parts of human brain

The developmental stages of the normal human central nervous system can be roughly divided into immature, mature and aging. The definition of normal aging brain changes means:

1. Stable maturity and expected age-related changes
2. There is a clear line between disease.

In order to study the changes in the brain during aging, neuroscientists observe the anatomy and physiology of the living brain through brain imaging methods. Or use autopsy specimens to study brain changes over time. Two theoretical hypotheses about brain and neurological aging have been produced through research.

### 1. Hypothesis based on organ, physiology and genome (Hayflick 1985)

Organ-based theories assume that the gradual loss of organ functions driven by the immune system or changes in the endocrine function of the central nervous system cause human aging. The passage of time and the interaction between humans and the environment cause random changes in the structure and function of molecules, cells, and organisms.

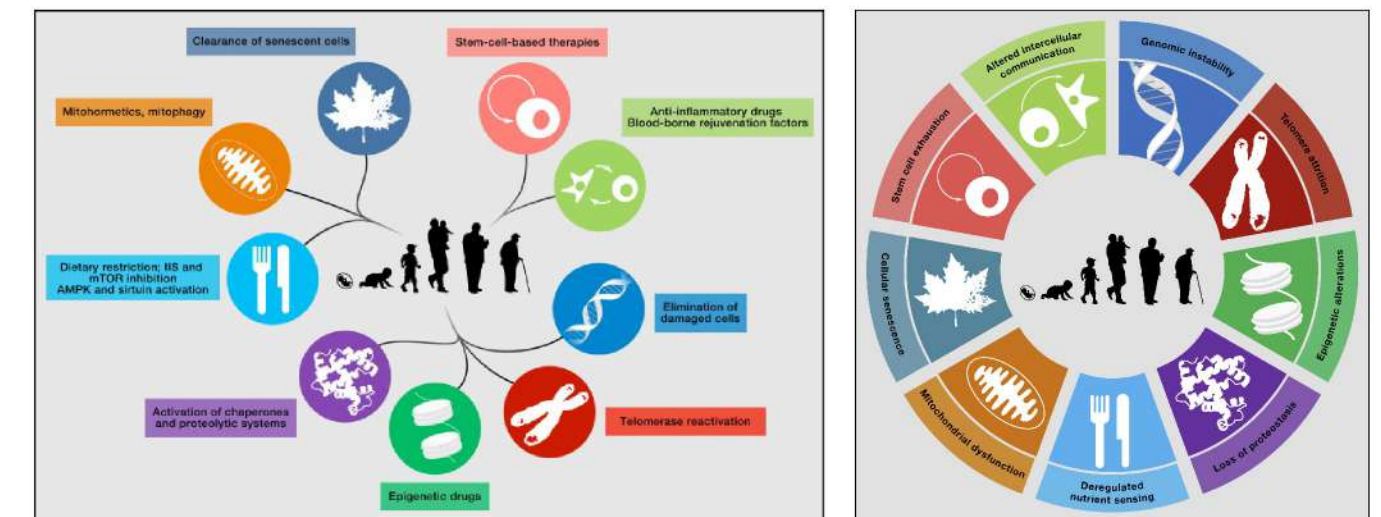


Figura 3: Molecular, cells and organisms that cause aging



The human brain reaches full maturity in the second or third decade of life. Every person's brain has a unique mixture of age-related changes that vary according to the type, location, and severity of the lesion. The rate of progression of age-related changes can vary from linear to parabolic; however, in most cases, the aging process is gradual.

During the normal aging process, the brain undergoes various neurochemical, structural and neurophysiological changes. After the age of 40, the size of the brain actually decreases by about 5% every ten years. Some causes may include: cell death, decreased cell volume, and altered synaptic structure. There will also be a slight decrease in brain weight as the cerebral cortex expands and the lateral ventricles increase.

Brain imaging studies have shown that the gradual decrease in overall and actual (especially frontal lobe) brain size is related to typical or normal aging. The volume of cerebrospinal fluid in the ventricle and cortex increases, the incidence and severity of high-intensity subcortical lesions increase, the integrity of white matter changes, and possible brain biochemical disorders. The speed of these changes seems to accelerate in the late middle age.



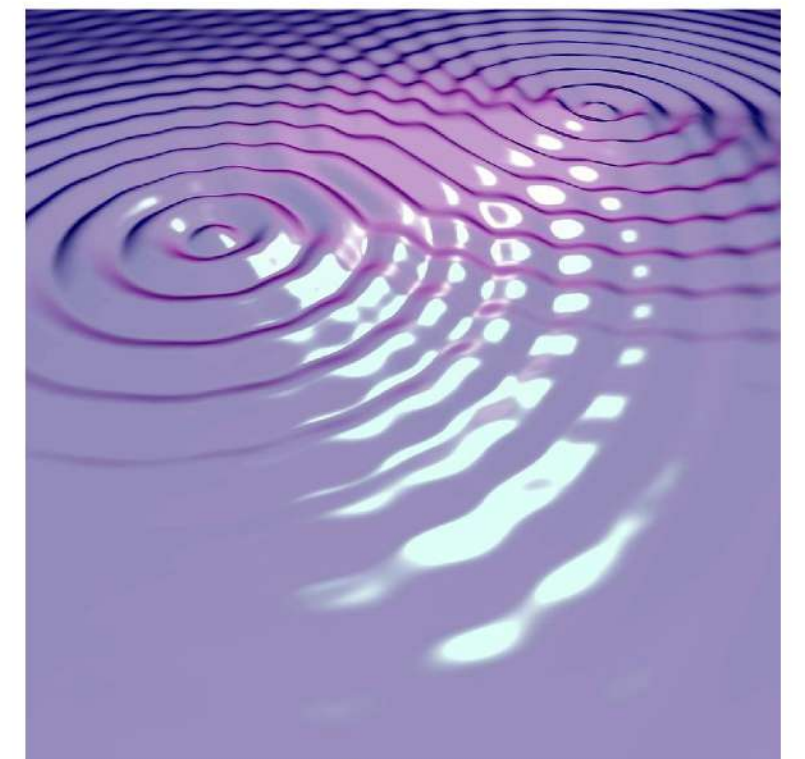
*Figura 11: The aging of the brain*

## *2. Other genetic theories believe that aging is caused by multiple genomic errors accumulated over a long period of time.*

The theory is that toxic levels of cellular waste accumulate over time as a result of free radical damage, incapacity of neuroprotective mechanisms, or cross-linking of important molecules such as collagen, DNA, and important proteins. Genomic theory assumes that aging is the result of somatic cell mutations, multiple genetic errors, or programmed cell death.

Cells may accept this aging process because they are vulnerable to a hypothetical process called "false mutation". Mistakes and disasters are a bit like a stone falling on the water, and the impact is magnified circle by circle as it spreads.

In cells, feedback loops exist in the molecular mechanisms that make DNA and proteins, because the same mechanism also makes new copies of itself. One step error will produce a defective unit, and this unit will make more mistakes, and so on. Therefore, errors may be amplified in these cycles. Some algorithms have shown that error catastrophe is theoretically possible, but cells can avoid it.



*Figura 12:  
Circular Wave Interference by Russell Kightley*



## Sensing function degradation caused by aging

The "sensory" (sight, hearing, touch, taste, smell) or sensory system sends information to the central nervous system (CNS) through the sensory method of the peripheral nervous system (PNS). Therefore, when the entire nervous system degenerates due to aging, the function of perceiving information will also be affected to varying degrees.

The changes in the internal functionality of the sensory system are interlinked. Just as the elderly "can't hear the sound without glasses", when the sensitivity drops, the human nervous system may find one perception to help the other. If the sensory system is affected, a young person can compensate well. However, the elderly may be adapting to sensory or perceptual loss through compensation, and the system will also be damaged.

In addition, our perception will change as our experience changes. Because we understand the possible meaning of brain signals, and it is these sensory experiences that may help us when our sensory system begins to decline.

On the one hand, the elderly can "complement" the missing sensory information based on memory events and learning experiences. On the other hand, life can be more challenging and even dangerous. If the overall sensitivity of the sensory system decreases, the elderly enjoy sensory activities based on their previous life experience, and will lack judgment on unknown dangers.

Let's talk about the specific effects that aging may have on the sensory system.

### 1. Vision system and functional performance

As the lens ages and its elasticity decreases, it is difficult for the lens to change shape to fit the distance of the target. People's ability to focus on goals begins to decline in the fourth to fifth decade of people. It is difficult to focus on objects at close range, making it difficult for the elderly to read printed matter and observe closely. Due to ultraviolet rays, the lens turns yellow with aging, which may affect the color vision of the elderly. Color sensitivity to shades of green, blue, and purple may also decrease.

The cornea may become less transparent and flatter. This may cause distortion or blurring of the image received by the elderly visual system. The deterioration of the nervous system will also affect the image judgment ability of the elderly. It will be more difficult for him to recognize moving objects, ground objects, objects that appear or disappear quickly in the light, and complex graphics. In addition, changes in the nervous system can also affect contrast sensitivity, the ability of the visual system to distinguish objects from background. Studies have found that poor vision and contrast sensitivity are related to accidents, falls, fractures and mortality.

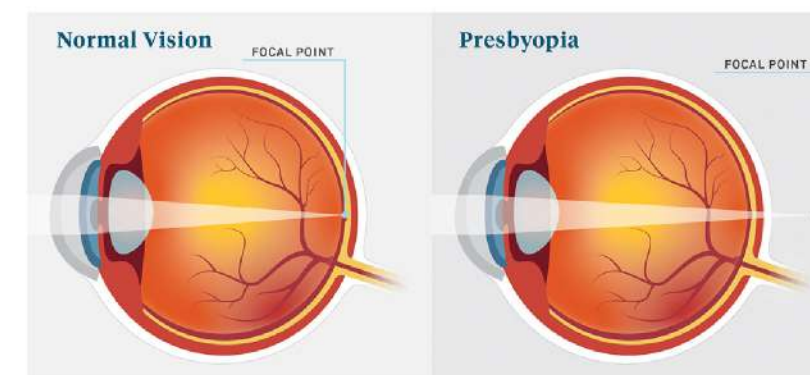


Figura 13 (right) : The aging of the vision system  
Figura 14 (left) : The lens changes over time





## 2. Auditory system and functional performance

Presbycusis, or senile hearing loss, is a typical degeneration of the hearing sensory system associated with aging. This is manifested by the difficulty of listening to very high pitches. If this loss extends to slightly lower frequencies, the elderly's ability to understand language will be impaired. And this type of sensory impairment will be aggravated by the situation, such as a noisy and busy environment or poor speaker placement.

Another possible reason is that the age factor has changed the cochlear basement membrane's hardness, or the cochlear cavity change caused central auditory processing disorder. This is a common but often overlooked cause of hearing loss in the elderly. This type of hearing loss is seen in people with neurodegenerative diseases, such as dementia.

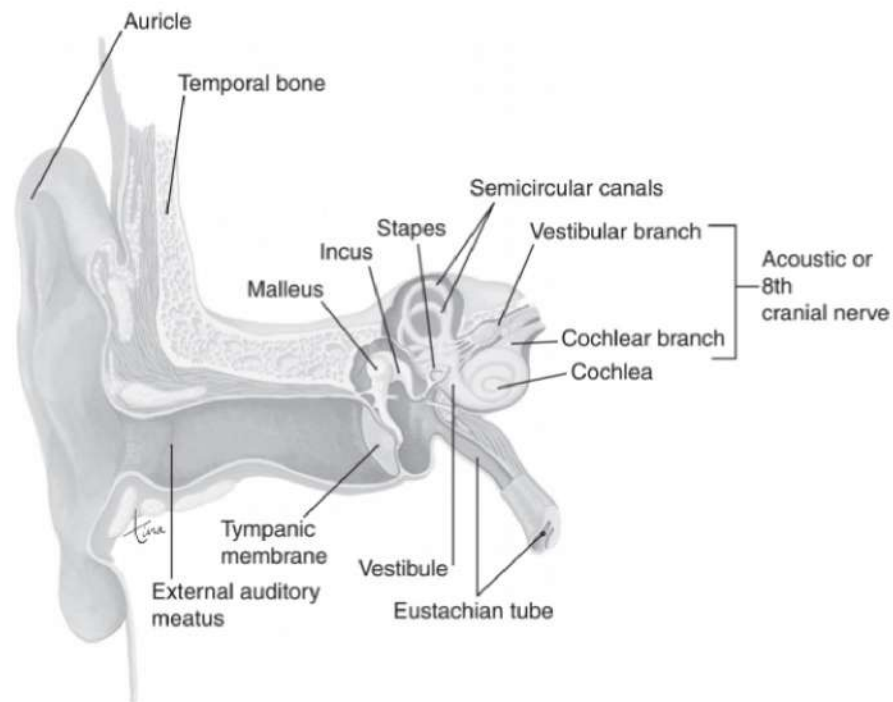


Figura 15: Outer, middle, and inner ear structure

A common problem among the elderly is tinnitus. More than 35 million adults have tinnitus, among which 2 million to 3 million have serious problems affecting the quality of life. The incidence of tinnitus increases with age, and the auditory response time also changes with age.

One aspect of hearing loss that has the greatest impact on life is the impact on language perception. This complex skill is related to several abilities: speech reception, speech recognition, and speech comprehension in stressful situations. The inability to understand or hear is the most common symptom of elderly patients with hearing impairment who come to the audiology clinic.

Behaviors that may be caused by the deterioration of the auditory system are:

- Repeatedly ask someone to speak aloud or repeat what has been said.
- Not answering oral questions or conversations.
- Inappropriate or inappropriate answers to questions
- Directly ask the spouse, family member, or caregiver to lean forward and tilt their head to one side to show pain or irritation;
- Lost or confused in conversation
- Withdrawal in social situations.



### 3. Taste and smell: physical changes and functional performance

Although taste and smell together constitute a chemical sensory system, they are anatomically completely different mechanisms. They are considered to be together because they are functionally related to the taste of food. The sense of taste and smell changes with age, but it is also susceptible to environmental effects such as smoking. Problems with smell and taste are common in the elderly. Chemosensory disorders can be divided into the following categories: loss of smell (anosmia), hyposmia (dysosmia), olfactory disorders (distorted sense of smell), abnormal taste (lack of taste), hyposmia (decreased taste sensitivity), and taste disorders (Distorted taste).

The change in taste with age is relatively small, while the smell change is more significant; therefore. The chemical sensory complaints and related disturbances of the elderly are more likely to be due to changes in smell rather than changes in taste (Heft & Robinson, 2014). Changes in the nasal mucosa, cribriform, and air passages may affect odor recognition. The drugs are taken by the elderly, the decline in the number of taste buds, and the coverage of dentures all affect the elderly's taste.

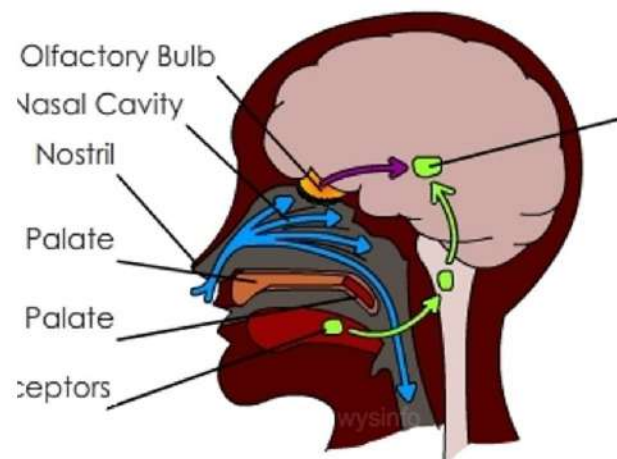


Figura 16: The structure of taste and smell

### 4. Touch and pressure

As people grow older, their ability to detect and distinguish touch stimuli usually declines greatly. However, these changes are often ignored after many years. One of the early significant signs of aging in the sensory system is decreased sensitivity in various forms.

Studies have found that sensitivity to pressure and vibration will decrease with age. From the early 1980s to the mid-1990s, these researchers conducted a series of experiments to study the correlation between age-related tactile sensitivity and factors such as frequency, stimulation duration, and contact area. In general, these studies show that sensitivity to vibration decreases significantly in the sixth decade and then deteriorates further with age.

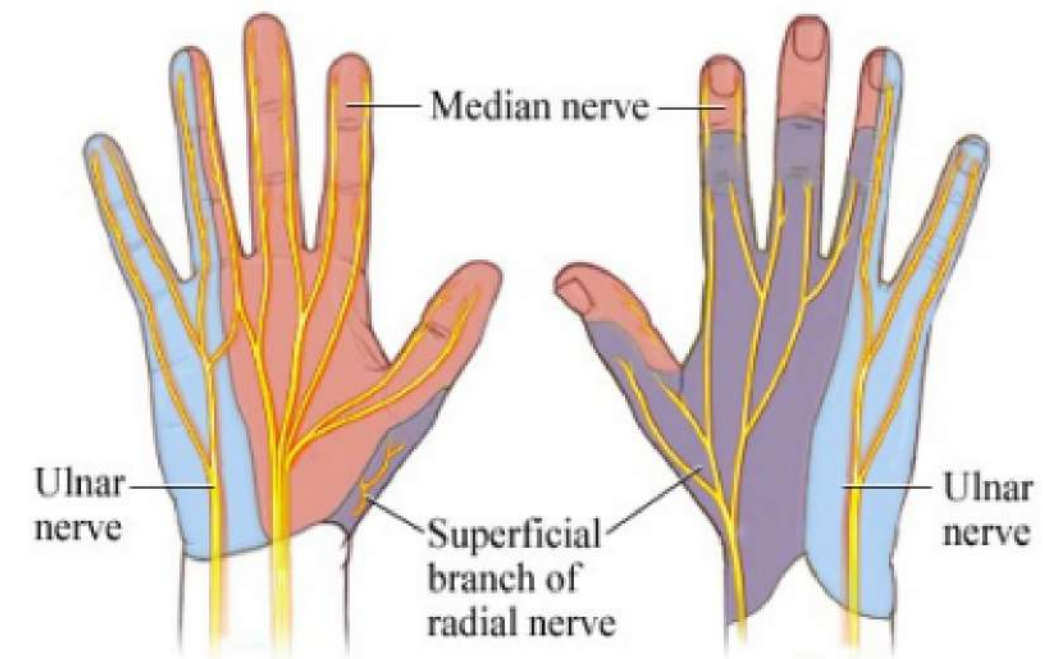
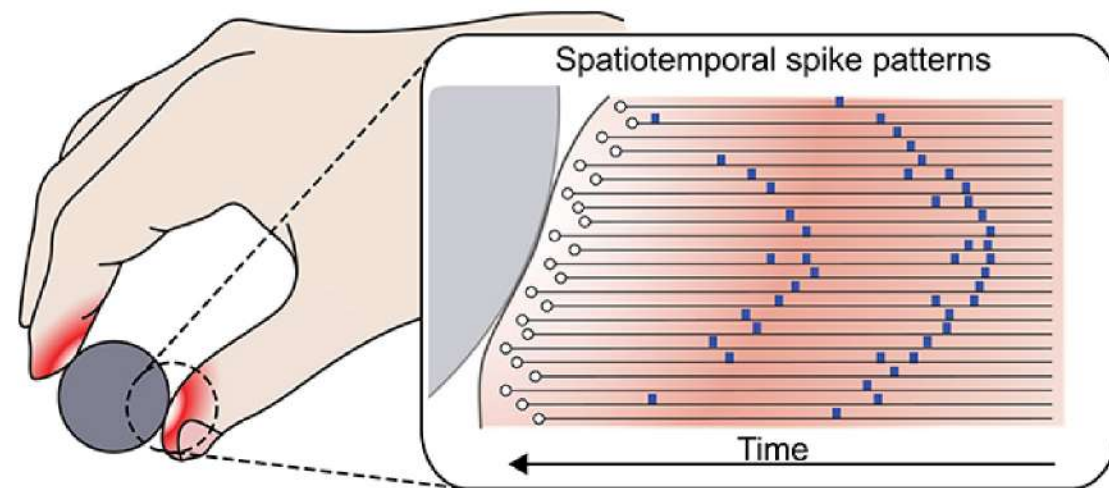


Figura 17: The structure of touch nerve



In the pressure sensitivity test, the pressure sensitivity of the hands evaluated by healthy older adults is usually relative to the norm or younger people. It is also widely believed that these changes become more pronounced in the sixth decade and increase as people age .

Humans have the ability to distinguish spatial details very finely, especially at the fingertips, because high-density innervation can achieve fine spatial resolution. Researchers turned to grooves and gaps as spatial stimuli to test spatial acuity. Under this stimulus, the spatial resolution limit of young people's fingertips is about 1 mm, which is close to the theoretical value—the limit imposed by the estimated innervation density on the area. Unsurprisingly, with age, the spatial resolution decreases significantly. The decrease in the elderly's spatial acuity is closely related to the decrease in hand agility.



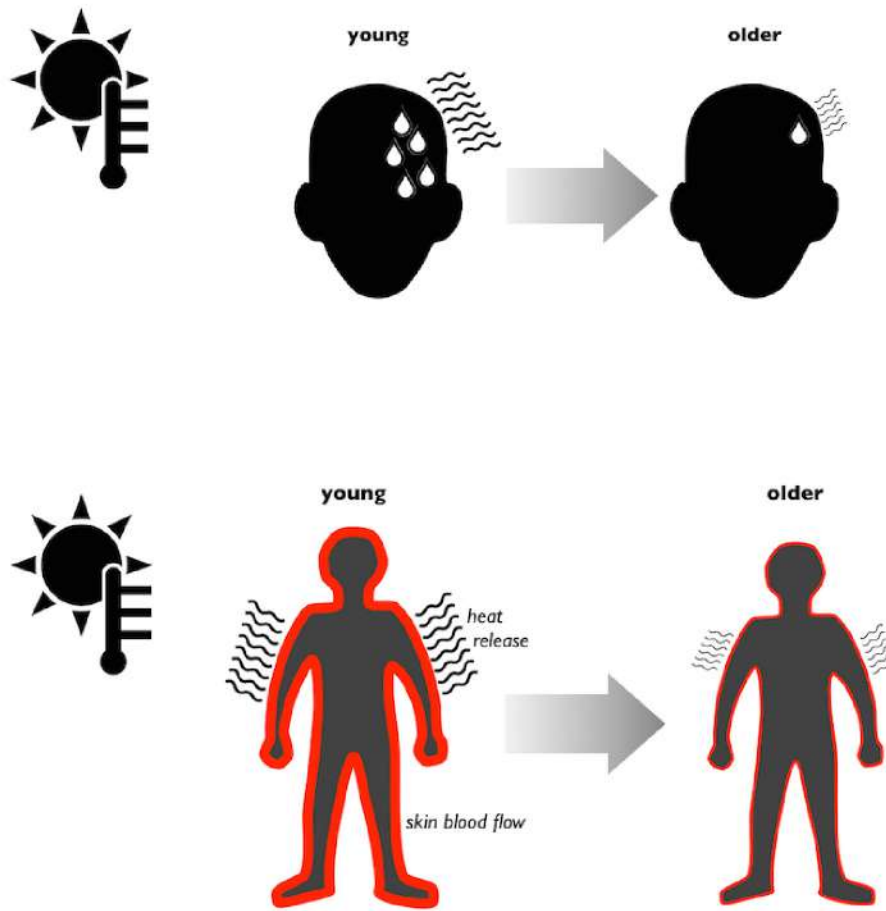
*Figura 18: pressure sensitivity*

## 5. Temperature

It is not clear how much of the thermoregulation disorders in the elderly are related to age. Changes in skin structure (such as thinning), reduced vascularization, chronic disease processes, personal health habits (such as smoking), and sedentary lifestyles may be the reasons. The skin has three auxiliary mechanisms. In terms of body temperature regulation: vasoconstriction or expansion, sweat glands secrete sweat and muscle hair around the hair follicle contract.

Part of the reason for the inability to cope with extreme environmental temperatures is the changes caused by skin aging, including the reduction in the number and function of thermal receptors. Aging leads to a decrease in the number of sweat glands and reduces the remaining sweat glands' functional efficiency. Therefore, less sweat is produced, resulting in impaired heat dissipation. Optimal hydration is required to sweat fully, and the hydration of the elderly may not be ideal. This is due to decreased urine concentration, reduced thirst, and restriction of fluid intake to control urinary incontinence.

Besides, the elderly cannot increase the skin's blood flow as effectively as the young, and the elderly respond to the cold environment by reducing their ability to generate heat. Shaking response and skin vasoconstriction response is poor. The reduction of subcutaneous fat reduces the body's isolation from heat loss.



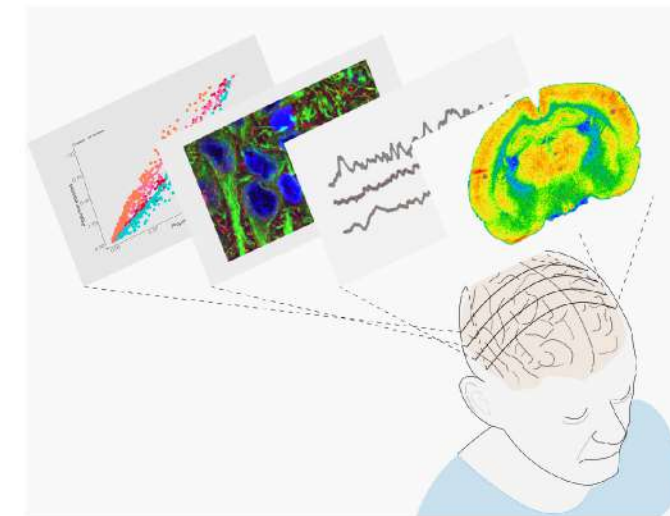
*Figura 19: Temperature induction contrast between old and young*

Interestingly, compared with the limbs, the body's central area loses sensitivity much more slowly, and the limbs show the largest and earliest changes with age.

## Cognitive function degradation that aging may cause

Historically, it is generally believed that as people grow older, their cognitive abilities will inevitably decline. It is also believed that these cognitive changes are common between individuals and cognitive abilities (such as memory, language, and decision-making). Healthy cognitive aging does not happen in a vacuum, nor does it begin at a specific age. For example, a person will not wake up and experience significant cognitive (or physical) changes on their 50th birthday. Cognitive aging is a process that lasts for decades. In fact, some cognitive processes start to change as early as 25 years old.

Cognitive aging is best understood by developing longevity, which believes that cognitive development is a lifelong process, from conception to death. The development of life expectancy considers the influence of standard age classification, the influence of normal social history, and non-standard life events.



*Figura 20: Cognitive function of human*



The standard age-graded influence refers to the biological or environmental life impact or experience for everyone, within a specific development time frame, the same biological or mature process. Examples are the social norms of adolescence or adolescence to drive at the age of 16. Non-standard life events are life impacts or experiences of organisms or the environment, which are unusual or atypical for a person. For example, losing parents at a young age, becoming a widow at the age of 20, or having serious health problems as a child.

This principle is important because it emphasizes the importance of the concepts of lifetime development and plasticity. Plasticity refers to the brain's ability to learn, adapt, and adjust throughout a person's life. This principle implies that things that happen early in life, such as nutrition, disease, or education, will impact development later in life. As a development process, cognition is malleable rather than immutable.

Cognitive aging occurs within the framework of gain, decline, and stability. This principle emphasizes some findings that the cognitive ability of the elderly is multi-dimensional and multi-directional, rather than generally linearly decreasing in all cognitive processes. This principle implies that some cognitive processes improve with age, some change compared with young people, and other processes remain stable throughout a person's life.

## The neurological differences between the old and the young

### 1. Cognitive aspects

As we grow older, we experience many biological and behavioral changes that may cause cognitive impairment. Numerous studies have shown that the performance of the elderly and young people in various cognitive tasks has been compared. Studies have shown that human cognitive function stagnates between the ages of 20 -30, and then slowly declines. As we grow older, while we accumulate knowledge, we also slow down in processing information. Although aging is inevitable, this change brings not only negative aspects. At different stages of life, we have different brain strategies.

The cognitive system is a complex system, which actually consists of several different types of memory systems. These memory systems differ according to the type of information contained and the impact that each system is subjected to during the aging process.

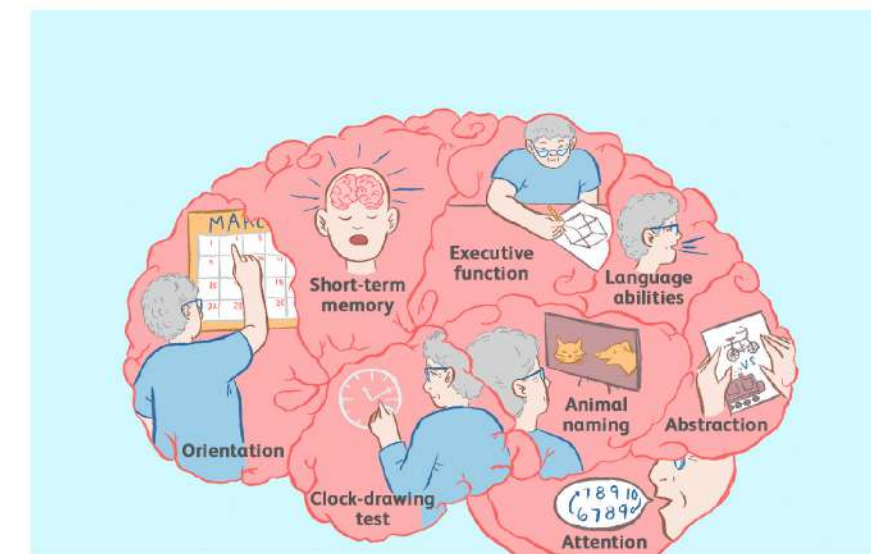


Figura 21: Cognitive aspects



### 1.1 Sensory memory

Sensory memory is a pre-attentive memory system that stores incoming sensory information in a short period of time (less than 250 milliseconds) and then converts the information into short-term memory or deletes the information from the system. It is called "advanced attention" because we are not aware of the information. When you are aware of any given stimulus (for example, a loud noise, seeing the word "cat"), the information has been transferred to short-term memory. Overall, the study found that in sensory memory, age-related differences are minimal or not.

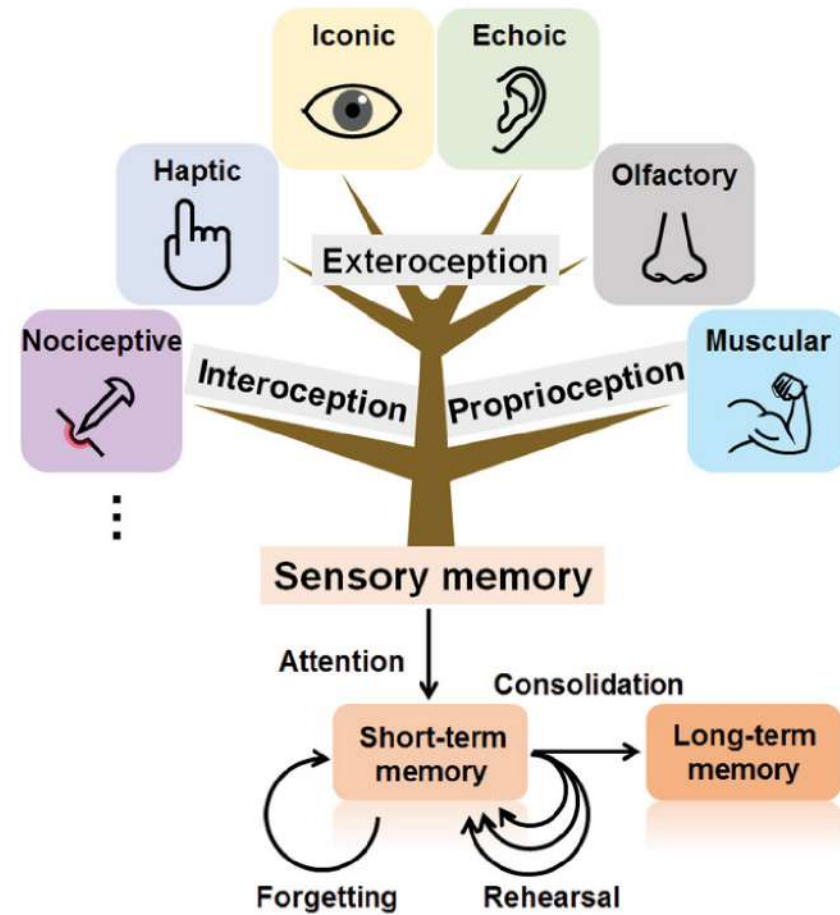


Figura 22: The structure of sensory memory

### 1.2 Short-term memory

"No rehearsal" is an important distinction because the true measurement of short-term memory does not allow participants to use any strategies to memorize information, such as repetition. To assess short-term memory, participants are usually asked to complete a simple memory task. They hear a set of stimuli (such as words or numbers) and must recall as many stimuli as possible immediately or after a period of time. For example, the researcher will show the subject a set of words (for example, dog, squirrel, fish, rabbit, elephant, ant, giraffe) at a rate of one word per second and ask the subject to recall as many as possible immediately word.

Experimental results show that older people use other "executive" resources to support short-term memory maintenance. However, as the load increases (for example, more than four items), older people generally perform worse than young people. And compared with young people, this decline in behavior is accompanied by less activation of the frontal lobe in the elderly, indicating that the upper limit of resources has been reached.

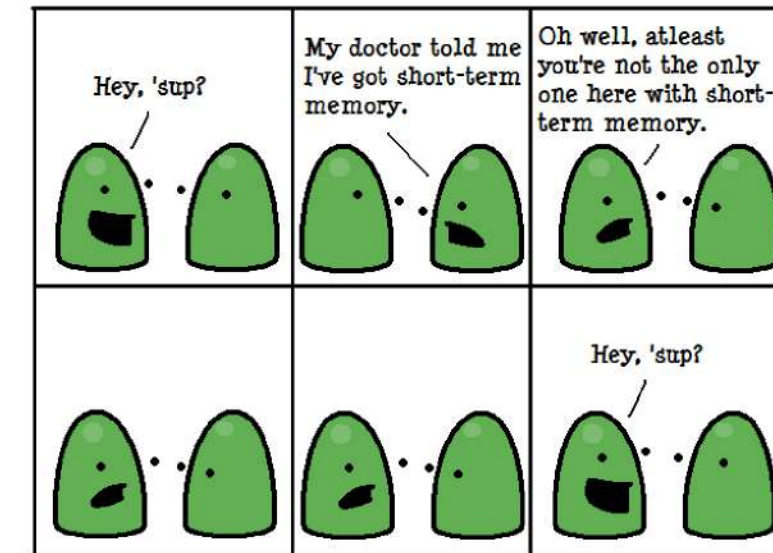


Figura 23: Short-term memory



### 1.3 Working memory

Working memory is a cognitive system that can actively remember information for immediate use in high-level processing tasks. It occupies an important position in the cognitive theory of aging. Working memory is conceptually different from short-term memory because it stores, maintains, and actively manipulates information. For example, when you are doing math problems in your mind or calculating numbers such as row size, you use working memory. In simple span tasks (i.e., digital spans) or item identification that only requires rote memorization, the performance difference between young and old is usually small.

Working memory promotes higher-order cognitive processes such as language production and understanding, decision-making, problem-solving, and learning. Working memory enables individuals to store new information as long-term memory while storing, maintaining, and verbally output information.

For example, when you tell someone how to drive from one place to another, you are using working memory. Studies have found that as task complexity or cognitive load increases, the effect of age will increase. When executive functions such as memory update, reordering, or prohibition are added to the task, the difference between the performance of the elderly and the young will be obvious (for example, words or operation span, N-direction tasks).

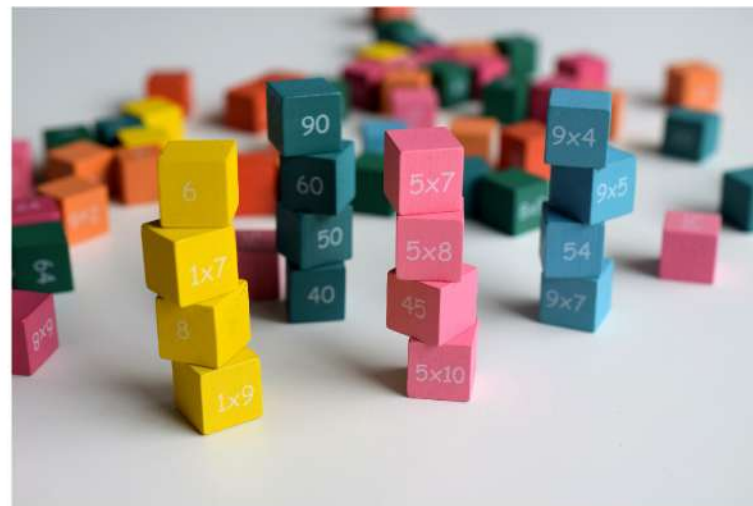


Figura 24: Working memory

### 1.4 Long-term memory

Long-term memory is not a single system. It consists of several different types of memory systems and is affected by many factors.

#### 1.4.1 Declarative memory

The information stored in episodic long-term memory includes personal, autobiographical memories, such as your first kiss or your 16th birthday party. Episodic memory also contains information about recent learning events. To illustrate this point, consider the following example. Suppose you participated in a two-part experiment.

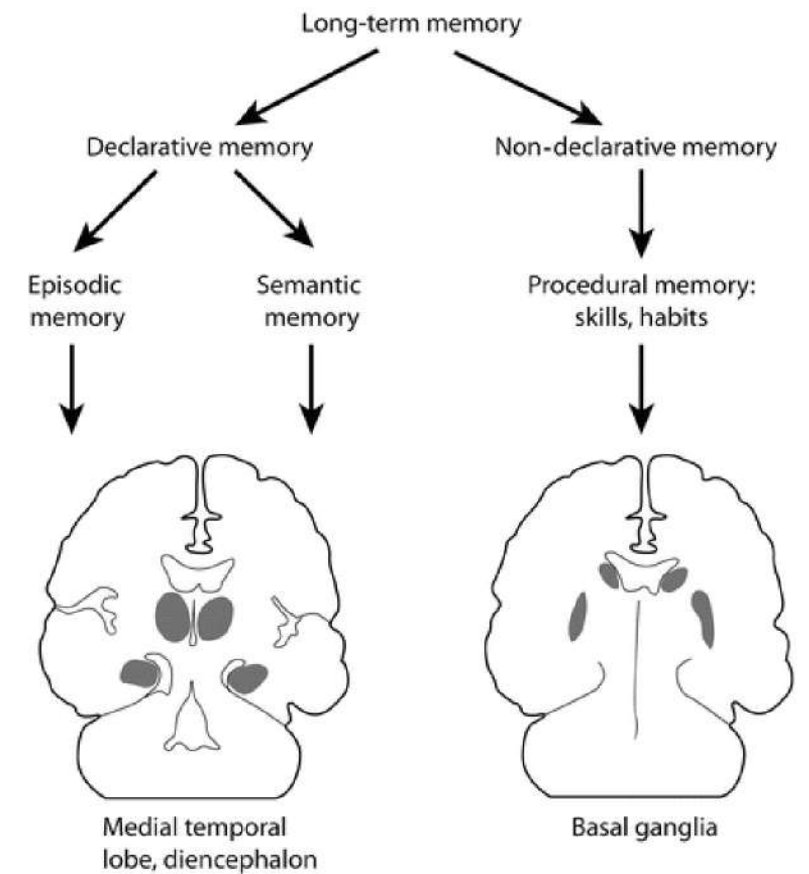


Figura 25: The structure of long-term memory

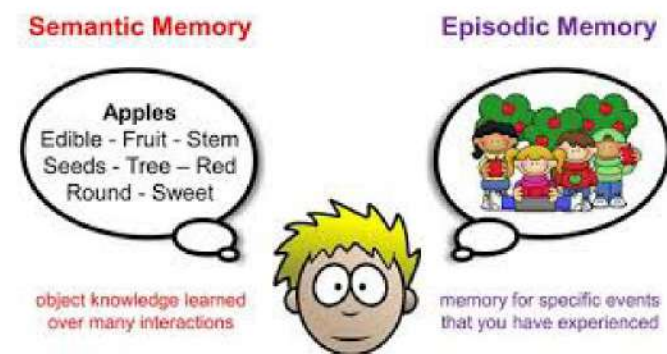
In the first part of the experiment, you will get a list of 30 words to remember. In the second part of the experiment, after a week, you will see a list of words: 30 original word lists from the first part and 30 new words. Your task is to point out which words are from the original list and which are new words. To complete this task, you need to remember the previous week's specific learning events (for example, did I learn this word or a new word last week?) Episodic memory relies on the effort and consciousness of specific memories (or learning events).



Semantic memory stores general world knowledge that has nothing to do with specific learning events. Examples include factual information (for example, who is the first president of the United States?), vocabulary (for example, what does the word "justice" mean?), language rules (for example, which sentence is correct: He ran down the street or He ran down the street?), and social etiquette and customs (for example, waving goodbye, saying hello).

Aging has different effects on situational long-term memory and semantic long-term memory. The age difference in episodic memory has always existed, and young people's performance is significantly better than that of the elderly. In memory tasks that require laborious cognitive processing, such as recall or fill-in-the-blank tasks, this difference is particularly pronounced compared with recognition tasks that provide context or clues. The age difference pattern of semantic memory is very different from that of episodic memory, and the performance of the elderly and the young are similar. Even depending on the task type, the elderly's performance is significantly better than that of the young. This increase in semantic memory is attributed to the accumulation of knowledge and experience in life.

In general, these studies show a series of age-related trends in declarative memory, from decline (episodic memory) to maintenance and enhancement (semantic memory) throughout a person's life.



*Fugura 26: Semantic memory & Episodic memory*

### 1.4.2 Procedural or non-declarative memory

Procedural or non-declarative memory is a nonverbal memory system used to store action-based skills and behavioral information: habits, emotional associations, priming, and classical conditioning. The retrieval of non-declarative memory can be carried out with little perception or even consciousness. Examples of procedural memory include playing an instrument, riding a bicycle, or performing a habitual task, such as tying shoelaces.

Research shows that non-declarative memories are preserved quite well, and age-related declines are rarely or even not noticed. When the complexity of starting a motor task increases, age-related differences are more likely to be found. A clear trend can be seen from these findings, namely the role of task complexity and the subsequent need to use additional cognitive resources. Compared with the elderly, young people seem to use cognitive resources more effectively when completing important tasks. For example, drive in an unfamiliar environment, in an undesirable environment (such as night, bad weather, high traffic flow), due to the complexity of the task and more cognitive resources than the usual situation, the elderly may be more difficult for people.



*Fugura 27: Procedural or non-declarative memory*



### 1.5 Prospective memory

Prospective memory enables people to remember future-oriented or planned tasks without using external memory aids (such as notes or lists). Examples of prospective memory include remembering to take medicine twice a day, carrying a brace while sleeping, going to the grocery store, and picking up dry-cleaned clothes. Many researchers believe that prospective memory is significantly affected by the normal aging process. However, studies have found that different prospective memory tasks have different results. The main difference lies in strategic memory and automatic memory.

Strategic prospective memory requires conscious effort to monitor the environment to remember, while external environmental cues usually trigger automatic or spontaneous prospective memory. Research using prospective memory tasks that require complex or high-level strategic processing has led to significant age-related differences. On the other hand, prospective memory tasks that use automatic or spontaneous retrieval processes require fewer cognitive resources, resulting in minimal or no significant age differences. For example, if a person needs to stop at a store on the way home from work, they are more likely to remember. Do this if the store is actually on the way home, as this provides a clue to improve memories. Evidence suggests that tasks that rely on spontaneous recovery are preserved in older people; therefore, providing clues that rely on these automatic processes can help older people perform prospective memory tasks.

### 1.6 Executive function

Executive function refers to high-level cognitive processes, such as reasoning, decision-making, problem-solving, judgment, abstract thinking, and logic. Overall, the study found that the young and old differ to a large extent.

In reasoning and judgment tasks, there are significant differences between young and old, and the strategies used by the elderly are not as effective as the young. Studies have found that older people are slower in assessment and judgment tasks and are less likely to revise judgment strategies when new information is obtained. Generally speaking, as task complexity increases and/or successful completion of tasks requires additional cognitive resources, age-related differences seem larger and more pronounced.

For example, when participants complete two cognitive tasks simultaneously, older people do not perform as well as younger people. This difference is likely due to the increased cognitive effort required to complete two tasks simultaneously than the cognitive resources required to complete another task alone.

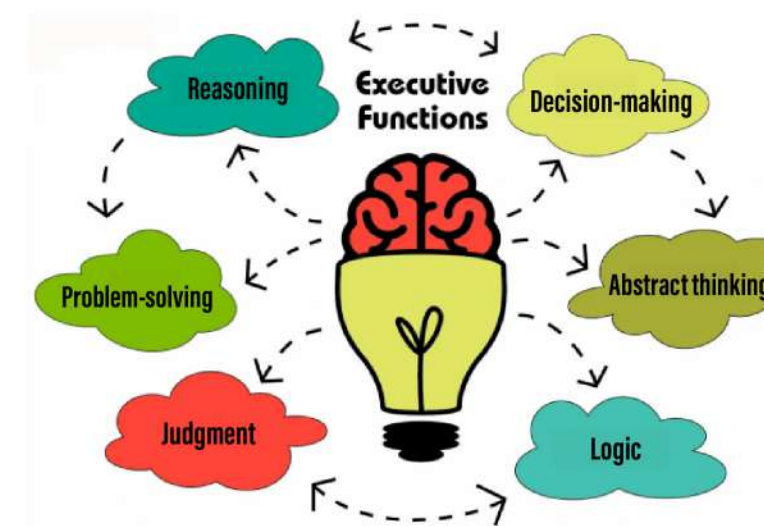


Figura 28: Executive function



The study also found that various aspects of executive function may vary with age. Specifically, the four types of executive function-related processes (i.e., inhibition, manipulation, semantic and phonological retrieval, and task switching) are age-related vertical declines. In comparison, five types of executive function-related vertical decline processes (for example, abstraction, capacity, chunking, discrimination, and short-term memory) can be maintained or improved with age.

Research has found that when the elderly complete decision-making tasks, they have accumulated decision-making knowledge and experience to compensate for age-related differences in memory and attention. The ability of high-level to successfully use daily cognition can be illustrated by research results related to job performance. Generally speaking, no significant age-related differences in work performance were found between young and old. It is attributed to seniors' ability to effectively use their previous experience and knowledge and specific strategies such as teamwork. The relief of this ability older people overcomes the changes in basic cognitive and physical processes to sustain success in the workplace. Other strategies to promote effective work performance, including these findings, also highlight the concept of cognitive reserve, which has been identified as a key point in cognition age.

### 1.7 Everyday cognition

The role of cognition in daily or daily activities. Daily cognition explores how individuals use cognitive processes in a real environment. Contrary to other areas of cognition, certain daily tasks may be more difficult for the elderly, especially when the task's complexity increases. In most cases, the elderly can successfully participate in and complete daily activities and tasks because the cognitive resources they need are not over-consumed or over-consumed. The tasks used in cognitive aging research are designed to overload participants' cognitive resources, resulting in decreased accuracy and increased reaction time. For example, new activities that make heavy use of executive functional processes may be more challenging for the elderly. A common example is driving. Although a lot of driving is automatic or implicit, other parts, such as driving on a busy highway or finding a restaurant in a new city at night, require many cognitive resources and faster reactions.

When determining whether the daily cognition and the resulting performance of the elderly are affected, the key factors that need to be considered include:

- (1) the need for cognitive processes,
- (2) the novelty of the task,
- (3) the complexity of the task,
- (4) the number of previous experiences or practices.

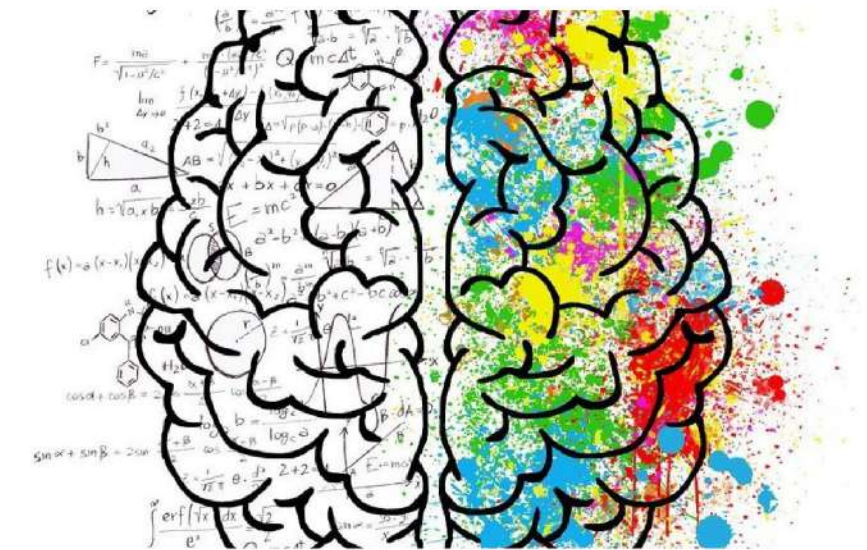


Figura 29: Everyday cognition



### 1.8 Language production and speech comprehension

The high-level cognitive process of language includes the production process and the understanding process. The production process is the process by which individuals produce and use language, and the understanding process is the process by which individuals perceive and understand spoken language. The production and understanding processes work together to provide easy and automatic language processing and understanding. Similar to other cognitive processes, research has found a pattern of age-related growth, decline, and stability in language production and language understanding.

In terms of the understanding process, the latent semantic long-term memory system needed to help understand the words and phrases used in everyday language is still intact. In some aspects, age-related differences can be found.



*Figura 30: Language ability of the elderly*

For example, the difficulty of finding words increases, and the experience of the tip of the tongue increases. People have found that in certain information generation and discourse fields (such as storytelling), the elderly perform better than young people. Simultaneously, in tangential conversation (for example, discussing irrelevant family dynamics or history), give Poor performance in direction or lengthy language. Adults rely on their own contextual characteristics, use mature semantics and language knowledge, and listen to phonetic prosody, thus maintaining extremely high language processing capabilities.

### 1.9 Wisdom

Many of us believe that as we grow older and accumulate life experience, our knowledge and understanding of the world will become deeper and deeper, which will lead to wisdom. The definition of wisdom typically reflects the knowledge gained through experience, the ability to understand things that others cannot understand, and good judgment. However, it is actually quite difficult to operationally define the construction of wisdom and develop reliable and effective methods for studying wisdom. This has led to mixed research results, from wisdom changing with age. It grows and then remains stable after a certain threshold.

Research has found that although certain mobility indicators of intelligence (such as processing speed and working memory) have declined, older people perform better than younger and middle-aged people in intelligence assessment.



*Figura 31: Elder wisdom*



### 1.10 Expertise

Professional knowledge is defined as having a high level of skills or knowledge in a particular field and reflecting on problem-solving, reasoning, and memory. A comprehensive study of the role of experience and expertise in older people's performance has uncovered a maintenance model. Some studies have shown the buffering effect of professional skills in typing, piano playing, and strumming. These studies prove the concept of plasticity in cognitive processing. Further research is needed on the "how" and "what" components of skills and knowledge acquisition responsible for developing professional skills.

### 1.11 Implicit and Explicit Processing

Implicit processing and explicit processing are two kinds of cognitive processes used to learn (or transmit) information from short-term memory to long-term memory and retrieve information from long-term memory to short-term memory. Implicit processing is unconscious, occurs without consciousness, is effortless, and requires minimal cognitive resources. Explicit processing is conscious, and hardworking, requiring moderate to large amounts of cognitive resources.

To illustrate these two processes, imagine learning the lyrics of a song. You can learn lyrics subtly by listening to a song on the radio several times. Over time, you will unconsciously learn the lyrics of this song. Or you can use explicit processing and consciously practice 30 minutes of lyrics every night.

Other examples of using implicit processing include driving familiar routes, playing musical instruments, or reciting the alphabet. Driving in an unfamiliar place, learning to play a musical instrument, or memorizing the alphabet upside-down requires hard work and clear handling.

Generally speaking, new tasks require explicit processing, and those tasks that have been repeatedly learned or practiced will be converted to implicit processing. Research finds age differences in tasks. For tasks and activities that require implicit processing, there is almost no correlation between the activities and activities that require explicit processing and age. Focusing on familiar tasks in rehabilitation interventions may improve results because they rely more on implicit processing than explicit processing. For example, practicing personal actual dressing routines may be more beneficial than creating new tasks or simply simulating these tasks.

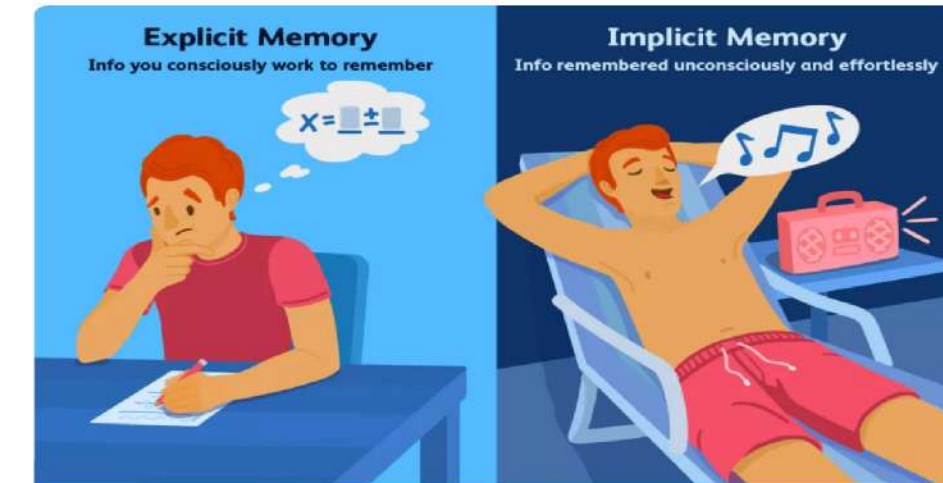


Figura 32: Implicit and Explicit memory



### 1.12 Emotional memory

When storing memories (especially those related to negative emotions), the elderly's brains are used differently from the young. Explore the brain activity of young and old, faces expressing different emotions and neutral expressions. Older people have a harder time recognizing expressions of sadness, anger, and disgust than younger people. Studies have found that older people have fewer connections between brain regions that produce emotions and regions involved in memory and learning. The elderly have a stronger connection with the frontal cortex, which is the brain's higher thinking area and controls these lower parts of the brain. Young people use more brain areas that are usually involved in emotions and memories.

Senior author of the Center for Cognitive Neuroscience and Professor Roberto Cabeza of Duke University said: "Young people can recall more negative photos." If older people use more thinking than feeling, then "this may be why older people There are more negative emotions, one of the reasons for the memory decline."



*Figura 33: Emotional memory*

The study found that older subjects' emotional centers were as active as those of younger subjects, but the brain connections were different. There are certain trade-offs for each working method. The elderly learn to be less affected by negative information to maintain their health and emotional state. They may sacrifice more accurate memories to deal with negative stimuli, so they will not be affected much.

The researchers speculated: "Maybe there are different brain strategies at different stages of life." "Young people may need to keep accurate memories of both positive and negative information in the world. Older people live in a world full of negative emotions." So maybe they learned to reduce the impact of negative information and remember it differently."



## Mental health condition of the elderly

Social changes seem to make the elderly have no meaningful social role in the family or the community. There is ample evidence that the morbidity, mortality, hospitalization, and loss of functional status associated with common mental disorders in elderly patients have increased.

More than 20% of adults over the age of 60 suffer from mental or neurological diseases (excluding headaches), and 6.6% of all disabilities in people over 60 are attributable to mental and neurological diseases. These diseases in the elderly account for 17.4% of life years with disabilities. In this age group, the most common mental and neurological diseases are dementia and depression, which affect 5% and 7% of the world's elderly population, respectively. Anxiety affects 3.8% of the elderly population, drug abuse affects nearly 1%, and about a quarter of people over the age of 60 die from self-harm.

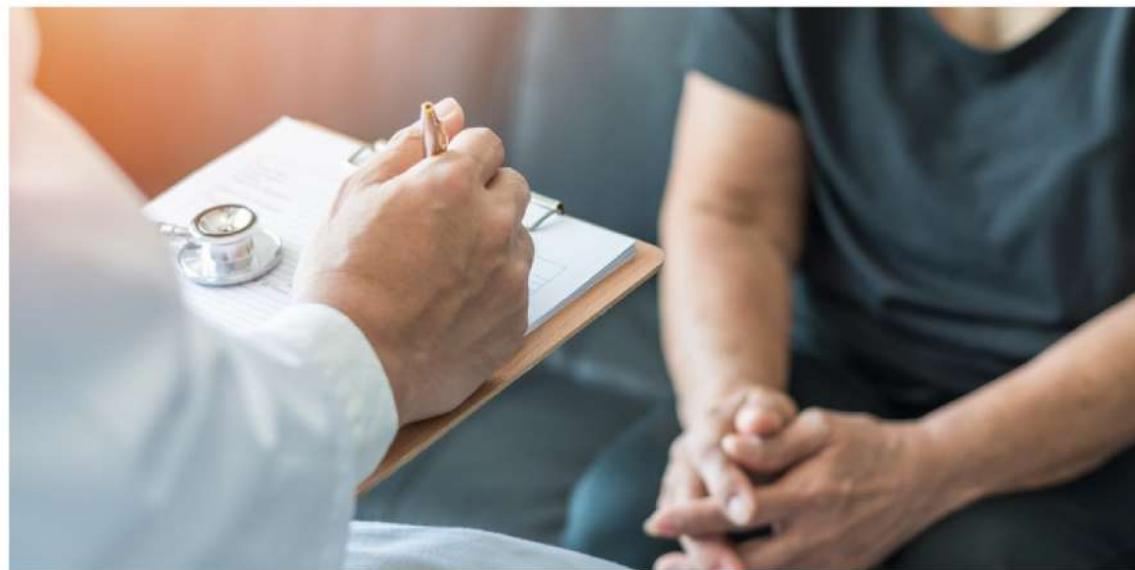


Figure 34: Psychological problems of the elderly

The overlap of depression and anxiety is common in the elderly, and almost half of elderly patients report obvious symptoms of depression and anxiety. The growth of the elderly population means that age-related diseases (such as dementia) and poor mental health conditions (such as depression, anxiety, suicide) and mental health conditions that seriously affect the quality of life of the elderly directly increase.

### Risk factors affecting the mental health of the elderly:

At any time in life, mental health problems have multiple risk factors. Older people may encounter life stressors common to all, but they will also encounter stressors in later life, such as continuous major loss of ability and functional decline. For example, older adults may experience mobility problems, chronic pain, weakness, or other health problems, so they need some form of long-term care. Mental health has an impact on physical health and vice versa.

For example, older adults with physical health conditions (such as heart disease) have a higher incidence of depression than healthy people. Besides, untreated depression in elderly people with heart disease may negatively affect their outcomes.



Figure 35: Factors affecting the health of the elderly



In addition, the elderly are more likely to suffer from bereavement or decline in socioeconomic status after retirement. On the one hand, the elderly are the ones who suffer the most from these incidents, and it is difficult for them to get comfort from other family members in terms of age and experience. On the other hand, society has not given enough assistance and attention to these problems for the elderly. Due to the actual or perceived alienation of the elderly from the family and society, they have no channels to obtain adequate help. All these stressors can lead to isolation, loneliness, or psychological distress in the elderly.



*Figure 36: Aftenro Finding Your Peace After a Loss - Aftenro*

The elderly are also vulnerable to abuse, including physical, verbal, psychological, economic, and sexual abuse, give up, ignore, and severely lose dignity and respect. Current evidence shows that 1 in 6 elderly people suffer from elder abuse. Elder abuse leads to personal injury and serious and sometimes long-term psychological consequences, including depression and anxiety.



*Figure 37: Molecular, cells and organisms that cause aging*

## Common mental illness in the elderly

### 1. Depression in old age

Depression can cause great suffering and impair the function of daily living. The incidence of unipolar depression accounts for 7% of the average elderly. In primary care facilities, the diagnosis and treatment of depression are insufficient. Symptoms are often ignored and treated because they occur simultaneously as other problems experienced by older people.

Compared with the elderly with chronic diseases such as lung disease, hypertension, or diabetes, older adults with depressive symptoms have poorer functions. Depression also increases people's awareness of poor health, the use and cost of medical services. Unfortunately, too many depressed seniors do not realize the symptoms of depression or take steps to get the help they need.



There are many reasons why elderly depression is often overlooked: older adults may think that they have good reasons to feel depressed, or depression is only part of aging. Or it may be because of isolation, which in itself may lead to depression, and almost no one around notices your troubles. He may not even realize that his physical discomfort is a sign of depression. And because of their mistrust, they may be reluctant to talk about their feelings or seek help like professionals. The side effects of many commonly prescribed drugs may also produce symptoms of depression. If you take multiple drugs, your risk is especially great. Although the mood-related side effects associated with prescription drugs may affect anyone, older people are more sensitive.

## 2. Anxiety in the old

Eriatric anxiety is originally a mental illness that is relatively easy to treat. Still, its low recognition rate leads to mental disability and a high suicide rate, making it a major killer of elderly health. It's not just emotions that are affected. Generalized anxiety disorder in the elderly increases the risk of physical disability, memory impairment, and decreased quality of life and increases death risk. Generalized anxiety disorder rarely occurs alone. As many as 90% of patients with this disease also have symptoms of another mental health problem, such as depression, mood disorders, bipolar disorder, or drug abuse.

Aged anxiety disorder often manifests as upset, inattention, anxiety, nervousness, bad temper, etc. Because its symptoms are similar to other mental illnesses, it is easy to confuse. They are likely to feel pain, but the cause cannot be found. The patient rushed to the general hospital and described his illness to the doctor, such as being uncomfortable, unable to lie down, inability to sit, unwilling to eat, inability to sleep, inability to work, etc.

However, routine physical examination is not abnormal. These pains, tightness, tremor, sweating, dizziness, shortness of breath, nausea, abdominal pain, weakness, etc. without organic pathological changes are likely to be complex manifestations of physical anxiety in anxiety disorders.

In addition, the elderly may become dependent. Depend on the hospital and depend on relatives. The children put a lot of energy to accompany the treatment, but the condition did not improve and even worsened. Freud interprets this phenomenon as a "post-gain effect," that is, after neurosis (including anxiety) occurs, the patient lacks a sense of security and needs the care to achieve spiritual and material satisfaction. Inappropriate overtreatment and meticulous care of the family members have "benefited" the patient due to the disease, and the neurosis continues.

There is also a situation where they have no physical disease or a slight innocuous illness, but they are worried that their disease can not be cured, and they constantly ask the doctor; worry about the cost of medical treatment, worry about worrying about their husbands, and worry about children and grandchildren. It is suggested that fear and worry about "worry for nothing" are the core symptoms of anxiety. The main manifestation is the persistent fear and anxiety that is not in line with reality.



Figure 38: Elderly anxiety a symptoms



In treatment, although the patient quickly enters a comfortable, relaxed, and sleepy state, the addiction is rapid, and it is difficult to quit. Once the drug is stopped, the patient reacts strongly, and the addiction worsens the condition, but the patient is kept in the dark.

Patients with severe symptoms may even have suicidal tendencies. Due to poor tolerance of the elderly and unable to withstand the torture, some patients finally chose to commit suicide. They don't even conceal suicidal thoughts. If the illness enters this stage, the family should choose a professional doctor who accepts and trusts and is experienced in conducting psychological treatment and drug intervention. Senile anxiety disorder itself is a relatively easy-to-treat mental illness. Due to its low recognition rate, it is difficult to detect, and it often develops and transforms into other serious mental illnesses, making treatment difficult. The probability of suicide caused by it is increasing day by day, and it has become a major killer of elderly health and cannot be ignored.

### 3. Schizophrenia in the old

Schizophrenia is a serious long-term mental health condition. It causes a series of different psychological symptoms.

It is sometimes difficult to distinguish senile schizophrenia from Alzheimer's because patients with senile schizophrenia may experience chronic remission and show a gradual decline in cognitive ability as they age. The following psychiatric states clearly differentiate from the characteristics of patients with Alzheimer's disease: (1) the transition to the future time organized memory, (2) hypersensitivity reactions, (3) contradictory personal relationships, (4) systematic physical illusions, (5) A prior mentality.

In some cases, normal aging changes may cause paranoid personality psychosis. In other cases, such changes may trigger schizophrenia. Researchers divide the clinical manifestations of depression and apathy in elderly schizophrenia into six types: hallucination, confusion, straightforward, stupid, eccentric, and rejection.

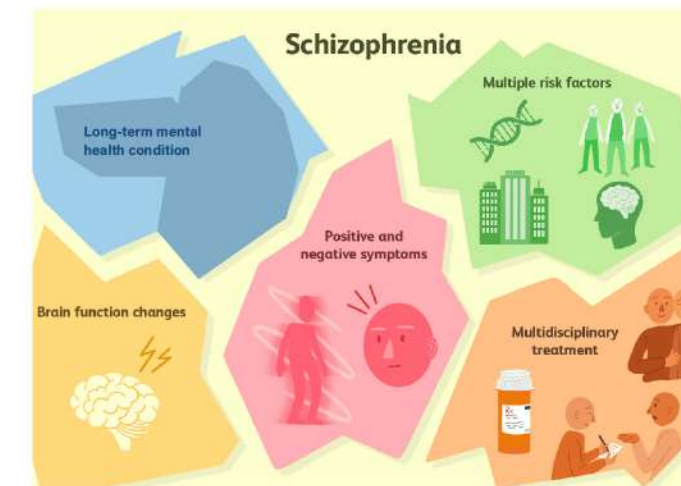


Figure39: Schizophrenia in the old

For elderly patients with schizophrenia, it is not uncommon for hallucinations and delusions to decrease and reach a stable state in late remission. Common phenomena are slow emotions, slow thoughts and activities, taciturn, dullness, lack of conversation, and social withdrawal. Patients cannot control themselves well, they will get angry for some trivial reasons, and they will use old-fashioned methods to avoid change. They often talk to themselves and fail to show meaningful empathy for others.

Elderly patients with schizophrenia are characterized by resilience, tenacity, lack of communication skills, and sensitive understanding of subtle signals. They have suffered a special experience because their acute psychosis is a period of physical disorders and allergies.



Therefore, their cognitive functions become fragile. On the other hand, their unique personality structure arises because these patients have survived long-term and difficult pathological experiences. This type of structure may involve personality reactions and result from long-term self-help efforts, although it does not have a good personality.

Convulsions and autism usually characterize advanced schizophrenia. Patients are not very interested in others. They become autistic to protect themselves because they are particularly concerned about other people's opinions. Behaviors associated with advanced schizophrenia include self-deception. Patients cannot lead their own lifestyle and cannot overcome this problem by pretending to be.



*Figure40: Schizophrenia in the old*

The interpersonal relationship between elderly patients with schizophrenia and others is always contradictory, and there are repeated passings and passings. Patients with schizophrenia usually begin to feel hypoesthesia, decreased sensitivity and perception, and depersonalization caused by self-interference with deafness. As the disease progresses, patients will feel a vague sense of uncertainty, do not know much about the surrounding environment, and the inherent excessive arousal lowers the sensory threshold. Therefore, hyperesthesia, increased sensitivity, increased perception, hypochondria, and not a loss of sensation, which is a characteristic of advanced schizophrenia.

People with schizophrenia often live in insecure places, their positions have been vague, and they have not found a goal. Because they cannot predict their own future and cannot pursue their own careers, they constantly worry about their future. This psychopathology is based on their unique "pre-event feast" mentality, in which they cannot realize themselves in the present. They always try to predict and prevent the next event. But schizophrenia will not cause someone to be violent, and people with schizophrenia will not have a split personality.

If schizophrenia is properly managed, it may reduce the chance of serious relapse. Effective methods include recognizing the signs of an acute attack, taking medications as prescribed, and talking to others about relieving symptoms. There are many charities and support groups that provide help and advice to people with schizophrenia.

### Overcome mental illness:

It is important to realize that depression is not an inevitable part of getting old, nor is it a sign of weakness or personality defects. Regardless of his background or previous life achievements, it can happen to anyone at any age. No matter what challenges we face, we need to take some steps to make ourselves feel happy and hopeful again.

#### 1. Connect with the world

Isolation only worsens depression. It is difficult to maintain the point of view and maintain the effort required to overcome depression independently. This is why support is important. Try to connect with others and limit your time alone. If you can't socialize, ask your loved ones to visit or keep in touch by phone or email.



But remember: digital communication cannot replace face-to-face contact. Try to meet people every day. Try not to stay at home all day. Go to the park, go to the barbershop, have lunch with friends, visit a museum, or go to a concert or performance. Helping others is one of the best ways to make yourself feel better and expand your social network.

Join a depression support group. Being with other people facing the same problem can help reduce your sense of isolation. It can also be inspiring to hear how others deal with depression. Take care of pets. Pets can accompany you, which is a good exercise for you and a good way to get along with others. Dog owners like to chat while pets are playing together.

Take classes or join a club to meet like-minded people. Try to join a senior center, book club, or other people with similar interests.

Create opportunities to laugh. Laughter can improve mood, so you can exchange humorous stories and jokes with your loved ones, watch comedies, or read an interesting book.



*Figure 41: Elderly need connect with the world*

## *2. Try to find the purpose and meaning of life*

Focus on what you can still do, not what you can do in the past. Instead of focusing on what has been done, it is better to focus on what can be done. You will see how much you can still improve.

Learn a new skill. Choose something you have always wanted to learn or something that stimulates your imagination and creativity, such as musical instruments, foreign languages, new games, or sports. Learning new activities can add meaning and fun to life and help you maintain brain health and prevent mental decline.

Participate in your community. Try to participate in local activities, tutor your children, or volunteer to participate in an important cause. Community work can be a good way to use and pass on your honed skills in your career without pressure or pressure.

Take pride in your appearance. When you retire, you don't have to work every day. It's easy to let go. However, working hard every morning can boost your self-confidence and improve your feelings.

Once you retire and your children leave home, you may have more time to visit the places you have always wanted to go to. Book a holiday in a new place, or go to your favorite place on the weekend. You don't have to spend money to travel, and you don't have to spend a lot of money to improve your mood. Take a walk or hike, fish or camp, or spend a day on the beach and enjoy the time in nature.



Many elderly struggles with sleep problems, especially insomnia. But lack of sleep can worsen depression. The target sleep time per night is 7 to 9 hours. Avoiding alcohol and caffeine, keeping a regular sleep-wake schedule, and ensuring that the bedroom is dark, quiet, and cool can help you better sleep quality.

Sunlight can help increase serotonin levels, improve mood, and cope with the seasonal affective disorder (SAD). Whenever possible, please go outdoors in the sun for at least 15 minutes a day.



Figure 42: Active elderly

### The psychological differences between the old and the young

The University of Washington once did a study to examine the emotional differences between the young and the elderly and studied a set of movie clips in which can be used as an emotion-inducing program in old people, especially when trying to cause attachment-related emotions. In the sample, 57 elderly and 83 young people watched movies that had been verified previously among young people. Their reactions were studied in a separate laboratory meeting to stimulate 6 target emotions (disgust, fear, sadness, anger, entertainment, and tenderness) and neutral states. Self-reported emotional experience was measured using the self-assessment model (SAM).

The results show that movie clips can arise the positive and negative emotions of the elderly. In addition, the elderly people introduced stronger negative emotions than the younger, especially in response to feelings of disgust and fear. They also behaved higher arousal power than the young people, especially in situations of sadness, anger, and tenderness. However, it's easier for the elderly to recover from emotionally induced effects. For entertainment video clips, the young people responded at a higher arousal level than the older people.

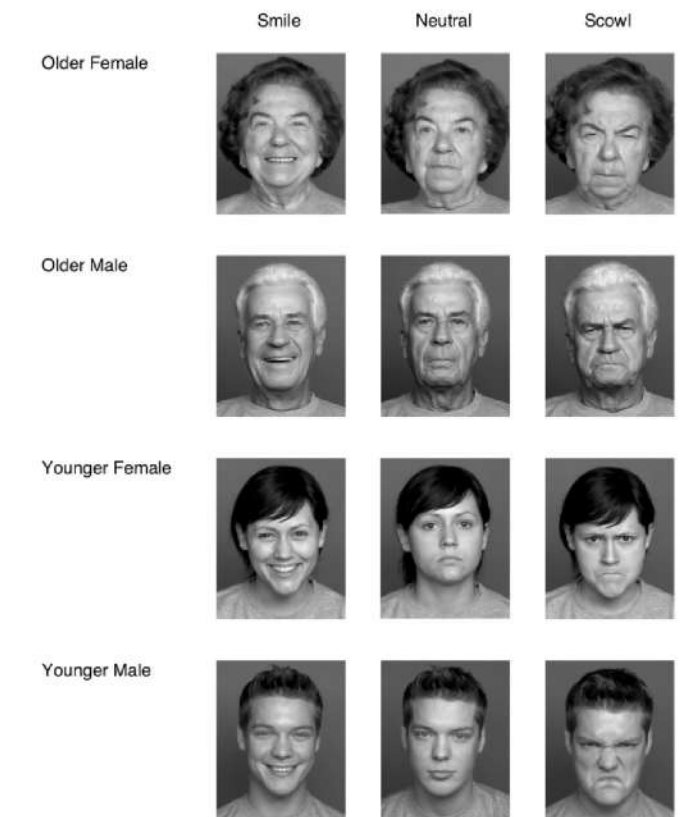


Figure 43: The psychological differences between the old and the young



The difference in emotional state and reaction between the young and the elderly. Many theoretical models of emotional experience in adulthood predict changes throughout the life stages. More and more studies have found that as we age, our understanding, management, and response to positive and negative events will change. Different theoretical models have been proposed to explain this phenomenon: (a) the theory of social emotional selectivity; (b) the integration of strength and vulnerability; (c) the theory of dynamic integration.

Social Emotional Selectivity Theory (SST) believes that time range plays a key role in motivation. The view of future time holds that, our motivational focus will change as the subjective concept of time and its time limit change. The theory divides goals into two categories: one is related to the goals that help us gain knowledge of the world, and the other is related to those help us gain emotional happiness. As people get older, they increasingly think that time is limited. This view leads the elderly to prioritize the behaviors or goals from which they derive emotional meaning, while the young prioritize those related to knowledge acquisition.

The difference in emotional reactivity is not only manifested in negative emotional state. A recent meta-analysis of 100 independent studies found that a reliable positive effect is that the elderly generally exhibit positive bias, while the younger generally exhibit negative bias. "Positive effect" refers to the tendency of the elderly to give priority to achieving emotional satisfaction. The SST directly connects thinking about the limited future with the appearance of positive effects. In short, the young people pay attention and remember negative information better, while the elderly pay attention and remember positive information better.

The elderly are self-aware of their limited vision. Then they are motivated to have a positive experience, and the accumulated emotional experience can also help them adjust their emotions. The theory also distinguishes between avoidable and inevitable negative experiences. Although the elderly are usually oriented and motivated to quickly get rid of negative situations, when negative experiences are stressful and unavoidable, their recovery will be worse and the results will be more serious.



## Delaying senescence

Lifespan studies show that heredity accounts for less than 35% of the difference in human survival time. Studies of human twins have shown that non-shared environmental factors cause more than 65% of survival differences. In other words, it is possible for us to delay the aging process by changing our lifestyle and environment. Research shows that we can try to develop good habits to delay aging from the following points:

### 1. Delay nerve changes

By improving overall health (e.g., reducing cardiovascular disease) and potentially delaying or slowing cognitive changes, and optimizing cognitive health). Some neuroprotective physiological changes are related to cardiovascular training, including increased cerebral blood flow, which will provide better oxygen and nutrients to the brain tissue. Studies have found that people who have a higher level of health at baseline will have less cognitive decline as they age.

Cognitive reserve is the remaining and available resources after completing a task, which consumes part of cognitive ability. Many physiological functions have a surplus or reserve capacity. For example, the heart rate reserve is the difference between a person's maximum heart rate and the current heart rate. The body reserve is the difference between a person's maximum ability and the current functional level. An individual can increase and build these reserves. Just as weightlifting can increase strength, mentally stimulating activities can protect a person's cognitive ability by building cognitive reserves. If a person can build a huge cognitive reserve, then the possibility of daily activities exceeding the available resources is reduced.

### 2. Though education activities

Participating in mental stimulation and novel activities can include increasing cognitive tasks' difficulty during treatment and educating patients on new and unfamiliar tasks at home to challenge themselves, such as learning a new language or activity. Tasks considered mental stimulation should be novel and mentally challenging because new learning contributes to nerve growth, development, and plasticity. For example, if a person completes a crossword puzzle in a newspaper every day for 15 consecutive years, the crossword puzzle will not be considered an uplifting activity because it is familiar and well-practiced. Playing musical instruments can help older people resist age-related cognitive decline and maintain their hearing ability.

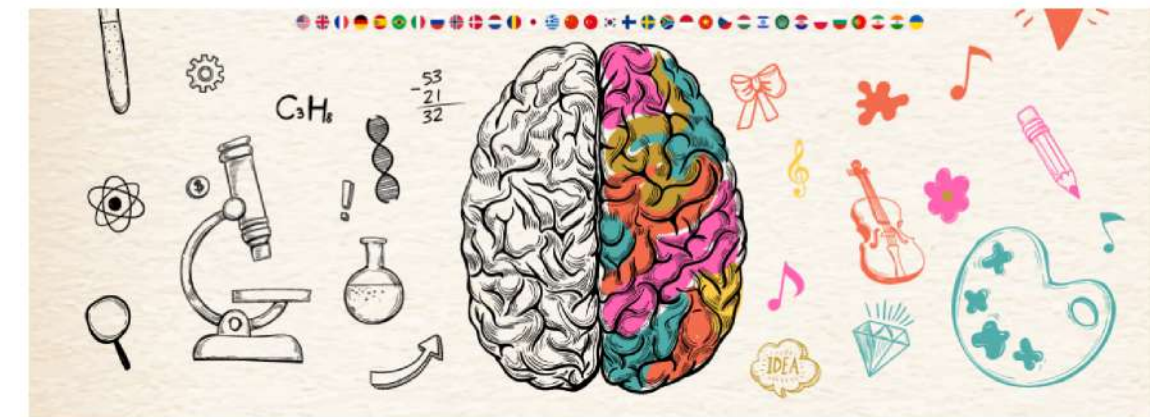


Figure 44: The impact of educational activities on the brain

### 3. Though changing lifestyle

Maintaining an active lifestyle, including regular physical exercise, can promote healthy cognitive function and neuroprotection. Finally, promoting social participation can be achieved through therapeutic interventions in the gym, rather than in a private room alone (if appropriate). Patients are advised to perform different activities throughout the day.



Once the patient returns, it is also important to discuss the importance of social participation. Understanding a person's daily life and social support can highlight areas that require more social participation. Incorporating these additional principles into regular rehabilitation treatments and providing patients with comprehensive education can greatly promote healthy cognitive aging.

#### 4. Though exercise

The aerobic training program has been confirmed as an effective test for improving executive function and level decision-making inhibition. Through regular interactions during the rehabilitation process, the therapist can integrate these activities to plan medical care and educate patients to continue these aspects of cognition.

Participate in regular physical exercise. Pursue intellectual stimulation activities. Stay socially active. Deal with stress. Healthy diet. Sleep good. Recent studies have emphasized many ways to actively manage our health and even reduce the rate of aging of the brain.

According to reports, aerobic exercises and moderate-intensity resistance exercises last at least 45 minutes in each training and combine them as much as possible in a week, which can significantly improve people's brainpower 50 and over.

Similarly, another study by the University of Miami found that compared with people who participated in moderate exercise, people over 50 who had done little or no exercise had the same decline in memory and thinking skills as in 10 out of 5 research years. In essence, physical exercise slowed the aging of the brain for 10 years.

Dancing also shows anti-aging effects on the brain of the elderly. A study conducted by the German Center for Neurodegenerative Diseases in Magdeburg, Germany, found that although regular exercise can reverse the signs of brain aging, dancing people see the most profound effects.

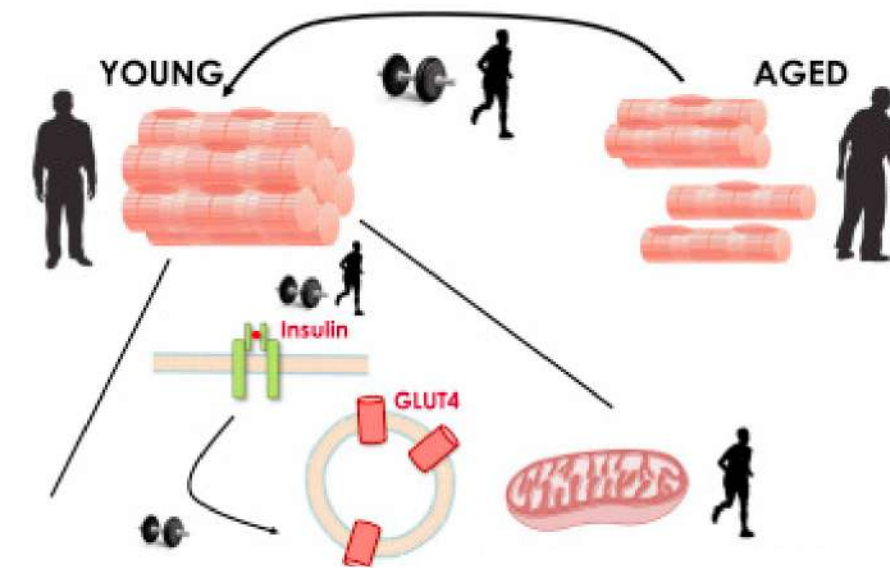


Figure 45: The impact of exercise for elderly

#### 5. Though social activities

Social activities can range from regular contact with friends and family, through visits to the home, regular lunch arrangements, and participation in hobbies and leisure activities, such as fitness classes in community recreation centers or swimming clubs. In addition, it has been confirmed that social isolation and lack of perceivable social support can have detrimental effects on mental health, including the development of depressive symptoms and the acceleration of cognitive decline with age.



Maintaining an active and mentally stimulating lifestyle through regular social interactions can help promote healthy cognitive aging, but further research is needed in each field to understand the direct effects and underlying mechanisms better. It will also be useful to identify potential obstacles or promoters, such as personality traits, demographic characteristics, or external resources (e.g., social support, financial resources) to participate in and adopt physical and mental, socially engaged healthy behaviors throughout the life cycle.



Figure 46: social activities

### 6. Though healthy diet

In some animal studies, we can get some inspiration about the relationship between aging and diet. Mammal aging is often described in rodent models, where the metabolic rate may affect the rate of aging. Reducing the calorie intake by 40% can extend the life span of rodents by 40%-60%. Reducing rodent feeding will slow down aging and prolong reproductive life while increasing neurogenesis. Such dietary restrictions can reduce oxidative stress by slowing down metabolism.

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Figure 47: healthy diet



## The social role of the elderly

The expectations of the appropriate or expected function of the elderly change over time. In ancient and medieval societies, contemplation was considered the central purpose of old age. Other activities, including work, sex, and military activities, are considered inappropriate. For many years, the traditional view has held that the elderly live well in an agricultural society, and their supportive efforts are an important part of the culture. Older adults aged 60 or above, as family members, volunteers, and active workers, have made important contributions to society.

Due to changes in the demographic structure, the elderly in the rapid industrialization and urbanization environment are degraded because they cannot contribute to their families' economic well-being. The sensitivity of the elderly population has increased. They suffer from physical disabilities and suffer from social, economic, and emotional alienation and isolation. Social changes related to industrialization have led to changes in the lifestyles of the elderly, resulting in reduced social participation and loss of dignity and self-esteem.



*Figura 48: work ageism*

The vast majority of the elderly, even those with physical or cognitive impairments, live in the community and can adapt well to the inevitable changes in the aging process. Many people continue to engage in meaningful careers that help improve their quality of life. People will find ways to cope with the typical physical and cognitive decline in later life. These differences are not all negative. Individuals may have to adjust to reduced vision or hearing, but they also have life experience and knowledge to help them cope with life's trivial matters. Although older people may learn differently from younger people, they still have the ability to acquire new skills and abilities, and they can also provide young people with valuable insights and observations.

In certain specific fields, including politics, religion, and academics, the elderly are also valued for their experience and wisdom.



*Figura 49: happy senior*



## Social relations among the elderly

Social relations have always been considered an important part of the aging experience. Social relations can be considered as a form of social capital for the elderly, a key resource in the course of life. It can provide help when in trouble, comfort when in pain, and information when needed. Research has found that the social networks of current citizens are smaller than those of current young citizens. Older people reported that most of their support came from family members, and younger people reported more support from friends.

### 1. The old and young

The view on the connection between the elderly and the young starts with the family, not the economy, and focuses on the relationship between grandparents and grandchildren. Based on the emotion and care generated by the kinship, an important connection is established between the elderly and the young.

In addition, as more and more mothers enter the labor force, the ability of parents to provide child care and supervision has further declined. Many local plans match older people with resources with children in need. The elderly in these programs act as mentors, mentors, caregivers, nurturers, friends and coaches.

As a field of sociological research, the relationship between age groups is rarely considered. It has only recently attracted people's attention. Regarding the so-called "generation gap" or "youth's rebellion", it is now a highly publicized phenomenon in countries around the world, although it is still a phenomenon that has rarely been systematically studied.

Children participate in education (work training), while the elderly are in trivial (but expensive) leisure activities. Both are largely excluded from the labor force and are therefore considered unproductive and dependent. The elderly do not participate in the main task facing young people (receiving education), and young people can best help the elderly in leisure activities by keeping away from themselves. Nothing in this model suggests that the connection between the elderly and the young leads to meaningful communication with each other.

### 2. The old and old

The social key of most elderly people is embedded and social integration in the environment of relatives and non-relatives. Because the elderly are more likely to experience the problem of the death of their loved ones and away from the familiar environment, they are more likely to face social isolation and other issues. Research shows that a very small number of elderly people do not nominate anyone in their social networks, and some elderly people do not nominate anyone in their inner circle. Participants aged 70-84 have more problems than those aged 85 and above. Participants aged 85 to 100 years old rarely have social partners, especially on the periphery of their social networks.

In addition to family relations, the social relations of the elderly are mainly developed around the communities and service centers around them. . . They expand their social relationships in daily activities. Many like-minded seniors gathered together. And realize that many people have the same energy and enthusiasm of young people, but they have fewer opportunities to gain support networks and develop new ideas. This method can bring important new value to their existing experience and ontology, thereby realizing new innovations.



## Family systems theory

Family system theory is a theory of human behavior that regards the family as an emotional unit and uses system thinking to describe the complex interactions in the unit. The notion that families are balanced and that each person has a fixed role, "which helps to keep the family system intact." The essence of the family is the close emotional connection between its members. People often feel alienated or alienated from their families, but this is more than fact. The family influences the thoughts, feelings and behaviors of members so deeply that people seem to live under the same "emotional skin".

People attract each other's attention, recognition and support, and respond to each other's needs, expectations, and frustration. Connectivity and reactivity make the functions of family members interdependent. It is foreseeable that after one person's function changes, another person's function will also change with each other.

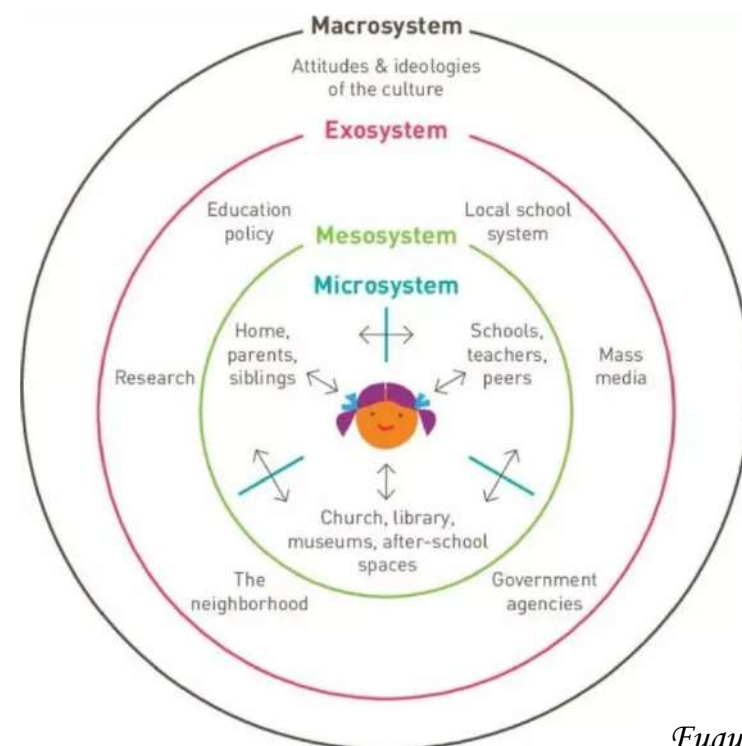


Figura 50: Family systems theory

Emotional interdependence may be to enhance family cohesion and cooperation to protect, shelter and support the family. However, increased tension will exacerbate these processes that promote unity and teamwork, which can cause problems. When family members feel anxious, anxiety can be exacerbated by sexual transmission of infection. As anxiety intensifies, the emotional connection of family members becomes more stressful than comfort. In the end, one or more members feel overwhelmed, isolated or out of control. These people minimize the tension of others. This is mutual interaction.

For example, a person has taken too much responsibility for the suffering of others due to being related to the unrealistic expectations of others, or a person has given up on his own thinking and decision-making in a relationship with others anxiously telling him what to do. More control. In fact, the most adaptable person "absorbs" system anxiety and is therefore the family member most vulnerable to problems such as depression, alcoholism, business or physical illness.

In theory, people can manage unresolved emotional problems with parents, siblings and other family members by reducing or completely cutting off emotional contact with them. But the emotional cutoff is hard to achieve.



## Social exchange theory

The development and expansion of social exchange theory applied to aging attempts to explain the exchange behavior between individuals of different ages caused by the changes in roles, skills, and resources that occur with age. One of the main assumptions is that different participants (such as parents and children or the elderly and young people) bring about resource interaction or exchange. The resources need not be material and are likely to be unequal. The second assumption is that only when the benefits are greater than the costs, and there is no better choice, the transaction participants will continue to participate in the transaction. This theoretical approach also assumes that the principle of reciprocity controls exchange: when we give something, we believe that something of the same value will be rewarded.



*Figura 51: Cooperation between the old and the young*

## Win-win cooperation

The goal of a win-win strategy is to avoid conflict. Win-win only works under two conditions: each group should have the same idea, and each group must have something to gain. This requires mutual understanding, listening, compassion and trust, and it takes time. In this relationship:

- There are no losers (everyone has tasks they like to complete).
- All participants participate (no one is left behind or sitting outside).
- The game works psychologically on many levels (communication, mutual support, playing in groups, etc.).

The key partnership is a symbiotic relationship between companies. These are the three most important factors in today's win-win relationship.

### *Industry influencer*

It is extremely important to be understood, respected and followed by industry online influencers. These influencers have won the right to feel special because they have accumulated a strong following through years of mastering the daily experience of your industry.

### *Strategic alliances*

Forming strategic alliances with other organizations in the industry through joint marketing is another good way to connect with target groups. The first step is to identify products or services that are complementary to your business. Select the top-ranked company in each product or service area, and then contact the business development department.

### *Strategic alliances*

Suppliers will usually perform tasks that your team may have or have completed internally. These vendors can provide economies of scale to your organization and can help you accurately determine the resources you need at any given moment without hiring or firing employees.



## Research

- Research overview
- Desktop research
- The User Research



## Research overview

Design research is the foundation for creating products, services, and systems that respond to people's needs. Understanding and satisfying human needs are essential to improving human life and better governance. The main purpose of design research is to generate value for end-users, mainly through the cumulative collection of user behavior for analysis, and develop reasonable solutions for confirmed user needs. Using design research, we develop products to meet users' needs who have not even articulated them.

In the first part, I analyze relevant information and data processing, filter irrelevant data, anonymize the information for participants' privacy, mark all the information with metadata, and classify the information to support future needs and Possible opportunities.

In the second part, I conducted more in-depth research on users through interviews, questionnaires, and other methods. As designers, we need to analyze and clarify complex human behaviors and perspectives, immerse ourselves in user experience scenarios, and find user needs as product pain points. These are closely related to user research.

## Desktop Research

### Current social service system for the elderly

#### *1. Community-based service organizations for the elderly in Alberta*

Community-based support and services (CBSS) are designed to help older people living in the community stay safely at home and delay or prevent institutionalization. CBSS provides (and links to) specific resources for seniors and their carers, including health plans, nutritional support, education programs about health and aging, and counseling services for carers, as well as general assistance in housing, finance, and property. Family safety. CBSS also provides opportunities for community and citizen participation through various volunteer programs and can enhance personal skills and attitudes to "live and have more control over the local community."

Currently, more than 20% of the elderly receive CBSS. The elderly who use these services need them: more than 90% of service users suffer from a variety of chronic diseases and related activities of daily living. With the rapid aging of population, even if the overall health status improves, the number of elderly people who can benefit from CBSS is expected to increase significantly in the coming years.

The support and services provided by CBSS have improved the health and social situation of older persons. These include programmes and support for healthy ageing in communities involving affordable housing, health and care, social integration, affordable transport, financial security, systematic navigation, nutrition and food security, physical activity and many other non-medical but vital services.



CBSS organizations can be nonprofit organizations, such as senior centers, or community organizations that provide social and recreational programs and/or support services for older persons in the area. It may include the provision of advanced services through municipal agencies.



*Figure 53: community service*

#### *The current problems facing CBSS*

A recent national survey of senior citizens living in the community found that the vast majority of people are very interested in receiving information about CBSS. However, respondents often do not know the scope of the services provided or where (or how) to access them. Respondents regard medical service providers as one of the main sources of information about CBSS, so it is unlikely to directly contact community agencies. When discussing health and social issues with caregivers, many elderly and caregivers feel most comfortable. Therefore, health care providers are in an ideal position to educate elderly patients and their caregivers about CBSS and recommend them for services and support when appropriate.

There is very little literature on health care providers' knowledge of the institutions that provide CBSS and referral patterns. A Canadian study published about 25 years ago found that doctors lacked basic information about these services. Almost half (47%) admitted that the lack of information prevented them from recommending CBSS patients. Although we have not found the latest research on this topic, we suspect that most healthcare providers still lack basic knowledge about the types of services these institutions provide, which types of patients are eligible for these services, and how to refer elderly patients (and / Or nursing staff) provide services when appropriate.

There are several reasons for the underutilization of CBSS by the elderly and caregivers, including lack of awareness, reluctance, unavailability and unaffordability. Clinicians can directly address two of these obstacles. Sometimes social work services are needed to help patients obtain services that can replace non-local or paid services.



*Figure 54: elderly refuse services*

Even if services and programs are available, elderly patients and caregivers sometimes refuse them. They may lack experience in obtaining services or have difficulty accepting their needs. They may refuse to meet with "seniors" or feel that the service is not sensitive to their ethnicity.



They may feel dissatisfied with unnecessary requests or loss of control; they may feel that they have the judgment or feel that the service is not tailored to their needs. It may be useful to anticipate these attitude barriers and provide evidence for the usefulness of local programs.

When considering options for community support, evaluating the patient's faith community may also help clinicians. Religious institutions are usually a trustworthy part of the lives of older subordinates, especially among minorities. The degree of distrust of medical institutions will affect their acceptance of advanced medical/social services. The elderly are more likely to belong to religious groups and participate in religious gatherings (67-69% of people over 65 years old) while participating in minority communities. Many of these congregations have advanced outreach services, from family visits to more formal programs.

Finally, visiting the CBSS program and meeting with staff is invaluable for clinicians to provide personal experience and anecdotes as well as general advice. Local programs usually welcome opportunities for clinicians to speak on specific topics related to health; clinicians and CBSS can establish mutually beneficial partnerships.



*Figura 55: religious group*

### *Capital source*

The origin of CBSS, which received state support, began in Washington. The growth of local agencies that provide CBSS is attributed to the federal infrastructure, which supports and supports them by funding management, services, and demonstration projects.

In 1952, federal funds were allocated to a social service plan for the elderly[9]. More than a decade later, the passage of the American Seniors Act (OAA) in 1965 (Medicare and Medicaid were established in the same year) created a formal framework for large-scale federal support for institutions that provide CBSS.



## 2. Elderly care in Sweden

Sweden has proposed a unique in-situ pension and housing policy initiative for the elderly population. Sollentunahem is a real estate company owned by the city government, which manages rental apartments, elderly living, and safe living in Sweden. They began to build and manage apartments for the elderly in the 1980s. Some of these elderly apartments are sold to individuals, who then form a tenants association and pay a certain fee every month.

### *Current service pattern*

There are different ways of service in old age. One solution for elderly apartments is home care services, where the elderly continue to live in their current homes and pay the municipality to provide services to their homes. Before receiving home care services, the municipality will do an assistance assessment to see what kind of care or services the elderly need. Home care services include purchasing, cleaning, laundry, food services, and daily activities, such as mental or physical training, accompany hospital or personal services, etc., helping with eating, hygiene, dressing, walking, gaining a sense of security, or making some social contact. In addition, you can also install a security alarm in the apartment and then install an alarm button on the resident's arm. To get this service, they must pay additional fees to the municipality. If someone falls or gets injured, he can directly contact the SOS police by pressing the button.

When choosing a location for the elderly housing solution, be close to public communications, pharmacies, hospitals, supermarkets, and banks or post offices. These apartments can make some small changes, such as lowering the threshold, more convenient bathroom, oven, etc. There is medical staff on call 24 hours a day, and doctors usually come once or twice a week or when needed. Some of these families have insurance that will take effect if the resident becomes ill.

Solutions for specialized care include all types of specialized care, such as dementia, Alzheimer's disease, and cancer. Here, patients live in nursing homes that specialize in treating specific diseases. This is a nursing facility with nurses, doctors, cooked food, cleaning, and all services needed to sustain life. Patients living in specialized care facilities usually live in a bed with a common living room area.

The elderly have high standards and are not a homogeneous group. There are many different values in this group. The pre-war generation was more inclined to save money to help their children financially, while the post-war generation wanted to use their money instead of saving money. The post-war generation has more in common with their children and is no different from them. 25-30% of people over the age of 65 want to move to the elderly. They like to live with their peers in the elderly community. Children and grandchildren don't always have time to spend time with their parents and grandparents. Collective life in old age is a good way to get other social connections when you no longer work.



*Figura 56: Older social*



## The current problems facing Sweden

### 1. It is difficult to fit.

It is important to establish an elderly living in a suitable area, with a suitable apartment plan and design, a suitable price, and a suitable area. Otherwise, no one will want to live there. The elderly are a group of demanding customers. They are already living well. They will only move when a perfect life emerges. Many people want to live where they lived or move back to where they grew up.

### 2. Social isolation

This is the minimum age for elderly apartment tenants to be 55 years old, and most people move into high-end buildings at 65-70 years old. Placing the elderly in the same place, safe living, and nursing homes will isolate the elderly from the rest of society. The elderly may be good to have a house within a calm environment. But only the elderly have a building, just for the elderly is also isolated in a certain sense.

In dealing with home care services, many older adults live alone in their old houses, who, when their wife or husband passed away, spend most of their time alone, and the only social contact is with home care staff to help with cleaning and shopping. We don't think this is a decent way to spend the last years of your life.



*Figura 57: Social isolation*

### 3. The problem of retirees without wealth.

How to solve the problem of a large number of retirees without any wealth. Where should they live? How should these funds be raised? One solution might be to provide housing subsidies so that older people can live in higher-standard rental apartments that they can afford.

### Capital source

The financing of elderly care is interesting because the number of people in need of services and accommodation will increase in the future, which will lead to a rapid increase in municipalities' costs. This fee must be raised in some way, and not everyone has the ability to pay for these services themselves. Since Sweden's taxes are as high as they are now, we believe that further increases in taxes will be detrimental to its economic growth.

Therefore, without increasing taxes, the cost of aged care needs to be funded, and one of the solutions is to cut costs. One way is to build a better house from the beginning. The municipality makes it less expensive for a person to live in their current house than to move to a temporary house. By adjusting ordinary houses to make it easier to use elevators and better adapt to the internal and external environments' construction plan, the need for relocation will be delayed. Another method is to finance buildings through alternative financing options. This happens automatically when it is possible to make a good investment. Several companies, including some in the real estate industry or the elderly life industry, have begun to invest in the elderly life field. This means that they have realized that the large elderly population is an interesting market, and good investment can be made by developing housing for this group.



## Development trend of service for the elderly in the future

### 1. Let the elderly stay at home for as long as possible instead of relying on medical institutions

In the future, the demand for elderly life will continue to rise. The second-largest cost for municipalities is elderly care, and this cost will increase in the future. To meet this cost increase, it is important to have an apartment that allows the elderly to stay at home for as long as possible.

The number of nursing homes has begun to decrease and will continue to decrease in the future. This is because our population is increasing and more and more people are getting old. People will try their best to live at home instead of living in institution.

The home environment will be improved, and the required services will be provided through home care services. This means that the living area is important because it must attract both residents and people who work there and provide home care services. It is also important that the area looks like a home rather than a hospital while meeting these needs.



*Figura 58: Family Medical services*

### 2. Sociability

We are not sure whether collective life will become a major trend. But for many people, the desire to live close to and play with friends is a fact. The life of the elderly is a way of life that society needs. If many older adults live in the same area, the elderly stay at home longer and more economically, which is better for the municipality. Older life must be central, access to downtown restaurants, cultural activities, friends, and other interests. It is important not to feel isolated. Properly functioning public transportation is essential to avoid this problem.

This lifestyle is more social than living in their current house because everyone in this building is retired. He can make new friends and social networks in this building, making it easier to check each other and Social.

Older people don't want to move to old age because they don't think they are old. This means that what they want is not what is currently available on the market. The important thing is to figure out what is attracting them to the idea of moving. Older people may want to be surrounded by younger people, not only because it brings them closer to their families, but also because they may think it is fun to be part of the younger generation and see how they live.



*Figura 59: The old socialize with the young*



### 3. Interest oriented

The future development of elderly life will focus on the so-called lifestyle. In these residential projects, people with a specific lifestyle can live the same elderly lives. Different ethnic associations have shown interest in the life of the elderly in specific cultures. People who have a common interest or lifestyle will hope that the life of the elderly will focus on this interest, such as the elderly life for golf or the elderly life for actors. . .

### 4. Application of new technology

Solve the problem of being alone by using social media, such as triple play. Every technical device, such as a lamp, has a sensor. If something needs to be changed, it can receive information through the phone, computer, or TV. They did some tests with technical solutions in their apartment, such as installing a TV on the refrigerator, providing a laundry room reservation service on the Internet, and an entrance security system with a camera. The use of simple technologies will increase, but not many people are willing to pay for new solutions. Seniorsgarden is currently developing a "leave button" if you are going on vacation, you can press this button. Except for refrigerators and freezers, all electrical appliances will be turned off.

In the future, the possibility of using technical equipment to reduce the workload is great, and we have no choice. For example, equipment such as Japanese mechanical toilets can reduce many home care workers' physical strain. As mentioned earlier, the development of technology has made great progress. Still, more attention is needed to truly positively impact the status of the home care service industry, which is very much needed.

## The use of mobile phones by the elderly

Mobile phones have become an important part of personal and business life across all age and gender boundaries. The use of mobile phones may help the elderly in many ways, especially in maintaining social relationships, providing security and accessibility. However, the elderly seem to be an overlooked user group in the design of mobile devices and services. The current complex functions and interface design problems make some elderly people afraid to use the device.

The study found that older adults are hindered by the following factors:

No	Items	Women		Men	
		Frequency	Percent	Frequency	Percent
1	Being costly	139	85	159	95
2	Reducing the possibility of face to face interaction	115	70	131	80
3	Possible hazards such as tumors, headaches, etc.	66	40	123	75
4	Learning delays and reduced learning	110	67	115	70
5	Mistake in choosing the key or written and tactile commands for mobile phones (especially on the touch screen)	98	60	89	54
6	Reducing the personal border preservation such as a person's privacy (openness of mobile windows, losing it, etc.)	107	65	74	45
7	Inability in upgrading mobile phones and software changes	144	88	57	35
8	Being afraid of filling the phone's memory (inability to empty messages, etc.)	71	43	49	30
9	Sending wrong written instructions because of the speed and touch of writing in motion	57	35	34	21
10	No Internet access	33	20	30	18
11	Lack of familiarity with English	161	98	162	99.30



### *Mobile devices trends:*

The use of the Internet through mobile devices such as smartphones and handheld tablets, rather than laptops and personal computers, is now recognized as a powerful means of responding to the challenges of population aging. Not only the latest electronic products, the use of mobile phones with the latest features is a phenomenon that crosses all age and gender boundaries. For many senior citizens, a smart phone means a phone that understands what they want to do with it, not a fully functional phone. For current and future technologies, actively nurturing or reducing negative factors will have a huge positive impact on improving the quality of life of the elderly and helping them to better adapt to the new living environment

The research results show that most elderly people use mobile phones for daily work, but they have a negative attitude towards using mobile phones as teaching aids. Increasing the age group's knowledge of the various mobile phone applications that can be used to help them, and improving their ability to learn these applications through mass media, family members, and peer groups can help improve the elderly's ability to use mobile phones and mobile phones. Phone attitude. Therefore, the use of these devices has increased..

### *Advantages for the elderly*

Traditional training is replaced by e-learning. Self-education is an integral part of e-learning. Mobile phones provide an e-learning tool that can be accessed anytime, anywhere, and can be used as a teaching aid for everyone, especially the elderly.

Among the elderly, the benefits of using these devices include: increased social interaction, reduced loneliness and entertainment.

Some of the problems that older people usually face include dementia, social isolation, decreased performance, and weakness in daily activities. For example, elderly people with Alzheimer's disease can refresh their memories by viewing pictures of events in the last 5 minutes on their mobile phones. Studies have shown that using mobile phones can increase their knowledge, promote their communication with friends, obtain emotional support, and enable them to participate in social networks to enhance the abilities of the elderly in different physical, psychological and social dimensions of life.



## The user research

### 1. Interview method

Interview Method Interview is usually a qualitative research technique, which involves talking to the surveyed with open questions and collecting data on the subject. Before the interview, we need to develop a detailed research plan and questions and understand the target users' opinions for the points of interest. By analyzing and summarizing this information, we can find user pain points and guide our own design concepts.

This survey was conducted through video interviews. According to the basic information collected, user needs and pain points mining three modules to specify the problem. The photos here are allowed by the interviewer. In my interview, the subjects were divided into 3 levels: young, middle-aged, and old. The following are some of the problems I found when talking with the survey respondents.

### 2. Interview

#### Question list

- # Do you live with an elderly person?
- # Do you often spend time with the elderly in your family?
- # What do you think is the main obstacle that prevents you from spending time with the elderly in your family?
- # What are your main contacts when you are away from the elderly?
- # Do you have anything in common with the old man?
- # What do you do with your time with the old?
- # If possible, are you willing to spend more time with the elderly in your home? ...

The issue of the company of the elderly is open-ended because I need to hear the views of the user group in different situations. I want to know what their perceptions and attitudes towards this matter are? Putting aside our products and services, what do users really want? How did they accomplish this? What are their expected service scenarios?

#### The interview structure

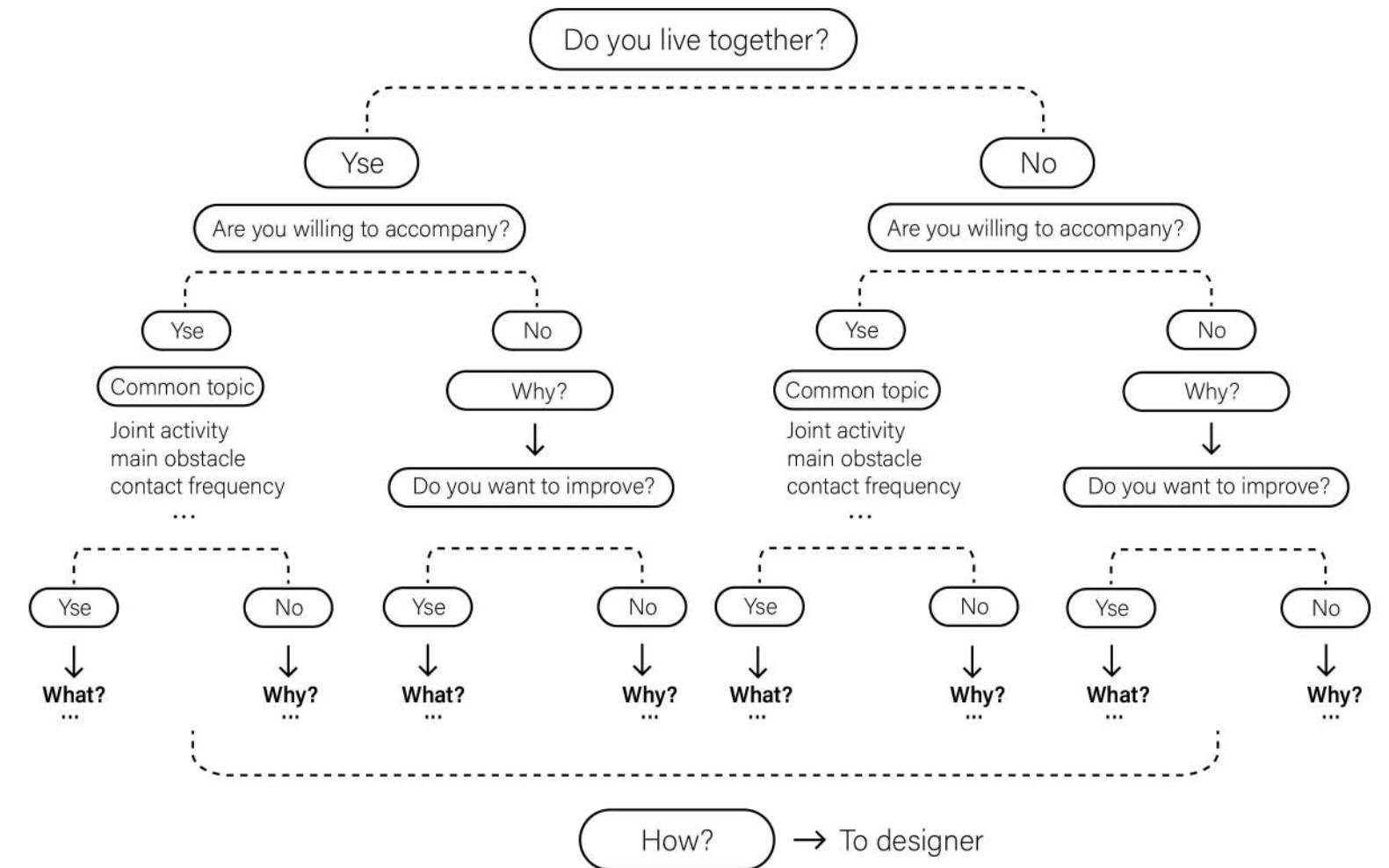


Figura 59: Interview structure



My research into the following situations:

Do you live together? Are you willing to accompany? Do you have a common topic with the elderly? What kind of company do you really want to be with the elderly? How do you usually accompany you now?

### 2.1 Young group

The first research age group is between 18-25 because the early research found that young people mainly after university, due to distance and other objective factors to communicate with the elderly.



*Figura 60: The videochat with researchers - young people*

### 2.2 middle-aged group

The second survey age group is middle-aged people in the 35-50 group. They face different situations among young people, and I hope to understand more views on this topic.



*Figura 61: The videochat with researchers - middle aged people*

### 2.3 Interview result

1. In contemporary life, many young and even middle-aged people do not live with the old. They are willing to accompany the elderly, but due to time and economic factors such as life, work and study, they cannot accompany the elderly at home.

There are still some people who think that they want to communicate with old people but don't know how to establish a form of communication (e.g. Learning education, eating, news, life.TV series, children, travel, body, family relationship, love...)

But we also can do these daily chores together when we're not together or we're not in a family relationship.



### 2.3 The old group

The third research age group focuses on the elderly, who are end-users. For the elderly group, the more I want to know is: what are they going through? What do they really want?



*Figura 62: The chat with researchers - the old people*

### 2.4 Interview result

After the epidemic, the elderly have less contact with the outside world. China's policy in response to the epidemic is to reduce the chance of face-to-face contact and infection. Young people can also communicate through electronic products, but the elderly lack electronic skills and the main way of communication is face-to-face communication. The repeated epidemics are tantamount to cutting off communication between the elderly and the outside world.

They have less time to go out and outside activities. They have revolved around their homes. Less contact with unfamiliar people and more time spent with family.

But It is also because of the epidemic. Young people don't have to go to school or work because of the closure of the city. They can spend time together.

Older people may want to be surrounded by younger people, not only because it brings them closer to their families, but also because they may think it is fun to be part of the younger generation and see how they live.

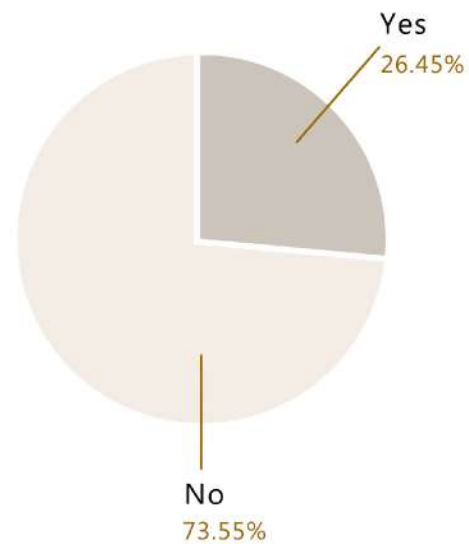


## The collection of information on the questionnaire

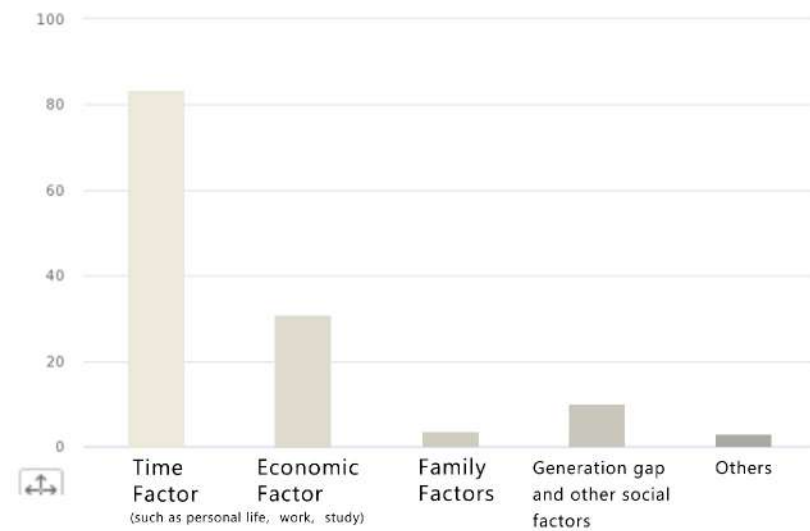
I conducted some questionnaire surveys, hoping to get more quantitative and qualitative data and get specific answers. To allow more respondents to participate in the questionnaire survey, I tried to answer questions as simple as possible and formulate the survey results through structured interviews.

**Sample size: 120**

Q1. Do you live with old people?

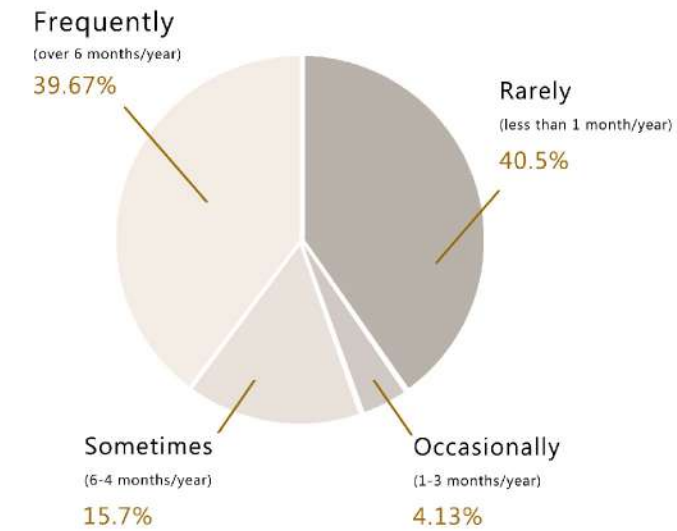


Q2. What do you think is preventing you from spending time with the elderly in your family?

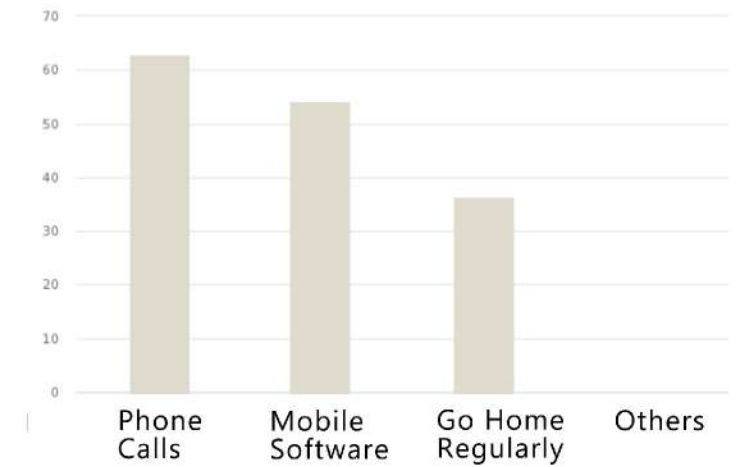


*Fugura 63: Questionnaire survey results*

Q3. How often you stay with elderly?



Q4. What is your main contact method when you can't frequently stay with the elderly in your family?



*Fugura 64: Questionnaire survey results*

The data show that most people do not live with the elderly, and the most important factors are time and economy. As for the frequency of accompanying the elderly, the results show that the two-level differentiation is more serious. The main ways to contact the elderly are telephone and face-to-face. This also shows that although the elderly have problems using digital media, the media is still a medium that we cannot discard when considering the communication.



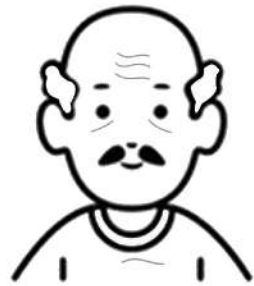
## Synthesis

- Persona
- The needs of the old and the young
- Advantages of the old and the young
- Market scenario
- Opportunities



## PERSONA

Persona is an important tool for designers to understand user goals and needs, communicate with development teams and related people, and avoid design pitfalls. Based on the previous user research and questionnaire data, I made a user profile for this project. Different roles are set according to age, based on their behaviors and attitudes, emphasizing user experience, and looking for user needs and pain points.



NAME: JOHN  
WORK: RETIRED ENGINEER  
AGE: 68

I do not live with my children and take care of each other with my wife. When my children are not busy with work, they will go home to visit us. If they are busy for a while, we will call to communicate. Of course, sometimes I will look at them when I walk by.

I hope that they can work and live well, and of course I will be happier for me to stay with my children and grandchildren.



NAME: MARY  
WORK: RETIRED TEACHER  
AGE: 79

I live with my son's family. When they go to work or school, I will clean up the room at home, watch TV, and plant flowers. . . If the weather is good, I will go out for a walk. Son and daughter-in-law will have dinner with me after work, we will talk about some topics of life but there is not much communication. Grandson will go home on holidays, but he always plays games in his room.

I hope to communicate more with my grandson.



NAME: HAN  
WORK: ART TEACHER  
AGE: 24

My grandma and I basically have a phone call every 2 weeks. We talked about the health issues of her, daily life and my recent work situation. I think the old people really needs companionship. She doesn't have many people to talk to, and she is always worried about me.

In the future, I hope I can have a big house where I can take my grandma and accompany her.



NAME: LILY  
WORK: DISGNER  
AGE: 25

My grandparents and I talked on the phone once every two months to March, and I would go home to see them when the holidays are over. We don't have many common topics.

I hope that when I have dinner with the old man, I will have a Plain chat with some topics.





NAME: FRANK  
WORK: MANAAGER  
AGE: 46

My parents and I did not live together, but not far away. I usually work very busy. I will call my parents about once every two weeks. When I am not busy, I will visit my parents and bring some food. We don't have many topics to talk about together. Generally speaking, we just recall the past, or some trivial things in life, and the current situation with my children. I hope to stay with my parents for a while when my work is not so busy.



NAME: ELO  
WORK: WORKER  
AGE: 43

I live with my father-in-law. During the day I work very busy, but at night we will eat together. Apart from our daily life, we do n' t communicate much because there are not many topics. I hope that the elderly can keep health.

## The needs of the old and the young

### The needs of the old

Based on the available data, the study puts forward the following five needs of the elderly: physiological health needs, safety needs, love/belonging needs, self-esteem needs, and self-realization needs.

#### Physiological health needs:

The analysis of the physiological needs of the elderly is mainly classified around the daily life of the elderly. Based on the existing data sources, the information about the needs and resources of the elderly is analyzed, and the possibility of future research is proposed. Especially focus on future difficulties in life, because older people who live longer will need more resources.

#### bite and sup :

One of the dietary needs is a balanced diet. The diet provided to the elderly should be nutritious, light, soft, tasty, and easy to digest in small amounts in a short time. A lot of liquid should be provided between meals. Food should not be rich in fat and carbohydrates but should be rich in protein, minerals, and vitamins. The food should be well done and full of love and love because the elderly are very sensitive and picky. The elderly's food is milk, curd, cheese, eggs, green leafy vegetables, beans, and ramen noodles because they contain a lot of calcium needed by the elderly.



Figura 65: Best foods for older adults

Due to the aging of the body or the epidemic, it is difficult for the elderly to buy food. Some older adults tend to choose more of their own food for consumption, not only because of their health but also out of personal hobbies.

#### Sleep:

The elderly should be provided with comfortable, clean bedding with mosquito nets. Their sheets should be changed every 3 to 4 days. Oilcloth can be used for bedridden patients. They should not be left alone in the room at night. The side table should be placed next to the bed to keep the spitting pot, glass, water and medicine, flashlight lighting, etc.

The older man wakes up all night to urinate many times. Conditions such as congestive heart failure or kidney disease can cause sleep problems. They may have difficulty lying flat and unable to sleep comfortably enough. If you find yourself sleeping on a recliner or waking up multiple times throughout the night, it is important to t

The nap should not exceed 20 minutes. Exercise can help you fall asleep better. Supervise the elderly to develop better sleep habits. Follow the bedtime routine, keep the room dark and cool, and avoid watching TV or using mobile phones in the bedroom. Go to bed at about the same time and wake up at about the same time every day. Don't eat, drink, or exercise at bedtime. In addition, the dreams of the elderly can also reflect the health of the elderly to a certain extent.

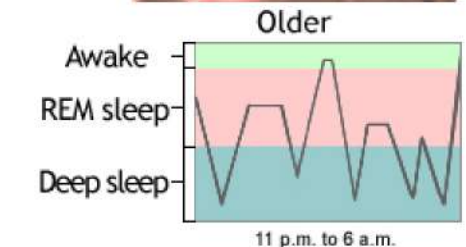


Figura 66: Sleep in the elderly

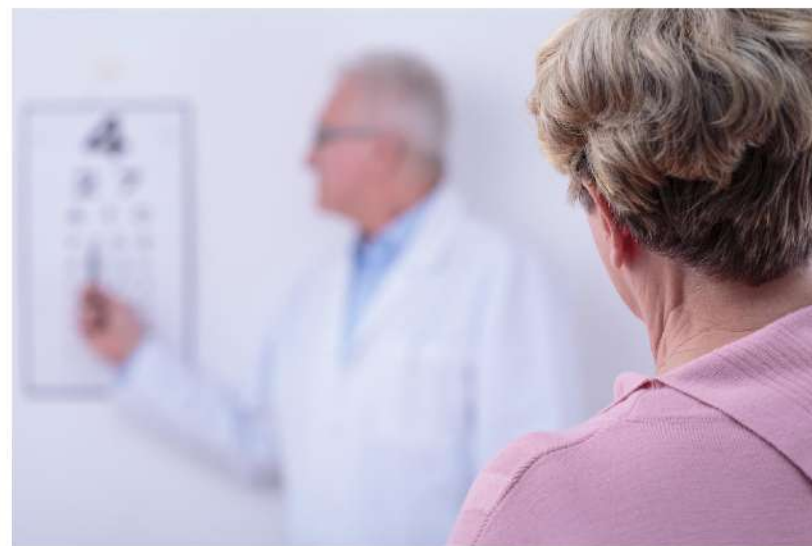


### *Disease care:*

The elderly are more likely to suffer from diseases or disabilities, and the physical distress that aging brings to the elderly is continuous. Through research in medical literature, we found that we can delay aging through exercise and behavior. Therefore, disease care mainly focuses on three aspects: delaying aging, preventing disease occurrence, and consolidating existing care.

In terms of delaying aging, the needs of the elderly are more reflected in their health needs. They spend a lot of time in health classes and health guidance. In terms of disease prevention, we must first determine the current health of the elderly because many diseases are caused by the elderly's unwillingness to go to the hospital for examination, and they always feel that they are not serious diseases, thus delaying the best period of treatment.

In addition, tracking and predicting existing diseases are also very important to the health of the elderly. A detailed assessment of the condition to establish eligibility or supplementation of financially-tested benefits can alleviate such problems. The survey found that another related demand revolves around taking drugs. Because of the decline in memory caused by aging, they are at risk of forgetting to take medicine or medicine is not correct.



*Fugura 67: Elderly body care*

### *Exercises:*

Previous studies have shown that exercise plays an important role in delaying aging. To maintain health, the elderly should exercise at least 150 minutes of moderate-intensity a week, such as brisk walking. Exercise at least 2 days a week to build muscle. Exercises such as standing on one foot can also help improve balance. Older adults with chronic diseases should understand whether and how their disease affects their ability to perform the regular physical exercise safely. If the elderly cannot do 150 minutes of moderate-intensity aerobic exercise per week due to chronic diseases (for example, 30 days a month, 30 minutes a day), they should perform physical activities within the scope of their abilities and conditions.



*Fugura 68: Elderly exercise*

### *Movement:*

The elderly also have a great demand for mobility. According to reports, about 42% of American seniors have difficulty walking two to three blocks or transferring from chairs. They gait slowly when crossing the road before the traffic lights change, or fall easily



## Security needs:

### 1.Home safety :

To encourage home safety for the elderly, one of the most important things to do is make the home safe. Safety also includes reducing risks before things happen. You can do this through some operations.



*Fugura 69: Elderly body care*

For example: remove the carpet. These may be decorative but usually lack a rubber lining to better grip the floor. Clean up the accumulated debris. This includes newspapers, loose clothes, and shoes. Discard or donate old furniture. Create a more open environment. This will be easier if the elderly are still walking instead of using a wheelchair or walker. In the latter case, the width of the doorway should be at least 32 inches for entry. Consider any sharp turns before or after the door. Avoid stretching the cord on the floor.

The family safety of the elderly also includes the elimination of hidden dangers within the family, such as natural gas and fire. . . The batteries in the smoke and carbon monoxide detectors should be replaced regularly (after seasonal changes). Check the power cords of all appliances and lamps in your favorite home. Replace frayed or damaged wires and limit the number of wires inserted into the switchboard. Take out the candle from home. If the candle burns or is left unattended, the candle will catch fire. Remind the elderly to keep a low profile when leaving home in a fire. This can reduce the chance of inhaling smoke. Instruct the elderly on how to "stop, fall and roll" when their clothes catch fire. The use of space heaters is prohibited. If the elderly insist on using it, please place it at least three feet away from curtains, bedding, or furniture. Remind your loved ones to turn off the space heater before going to bed or leaving the house.

### 2.Economic security

Older people's lives are at least economically stable: those who are wealthier in their later years still do so, while wealthy people remain wealthy. Therefore, poverty is still a problem for policymakers, not age.

Efficient wealth management is one of the needs of the elderly. They need expenses and related financial details and help identify the necessary financial changes to stay aligned with future retirement and investment goals. It also requires planning of wealth and guarantees the standard of living of the elderly under the condition that catastrophic financial events can quickly wipe out savings.



*Fugura 70: Elderly economic management*

The other hand focuses on financial security issues. Generally speaking, the elderly are lagging in the information contacted by young people, and they are one of the groups that frequently suffer from economic fraud. They need to understand the common scams that target the elderly and use preventive strategies to avoid them.

They need to check financial issues regularly, check accounts on time, and track the overall financial status, expenditures, and account status. Track various investment details. Discover potential fraud.



Check bank and credit card statements for signs of abuse or fraud—such as large, unexplainable withdrawals, checks written to charities or other groups at unreasonable amounts, or any other suspicious activity.

### 3. Network security

Network security has always been a topic of much concern. For the elderly, they are more vulnerable to cybersecurity threats. Young people can protect their network security by installing firewalls, blocking secure advertisements, and using complex passwords. However, the elderly's cybersecurity awareness and prevention skills are inherently weak, so the demand in this area is even higher.



*Figura 71: Elderly learn to use the Internet*

## Social needs, love/belonging needs, self-esteem needs and self-actualization needs — “psychological needs”

Love/belonging needs, self-esteem needs, and self-realization need to reflect the psychological needs of the elderly in these three aspects, which can be achieved through social, entertainment, and education needs. In addition to physical care, they also need psychological care. In old age, their nature will change, and there will be a tendency to stimulate. Because of the loss of their spouse, their lives have become miserable, and they feel unsafe. Therefore, I hope that family members will adapt to them and take care of all their grievances.

Older children should be encouraged to cultivate more love and respect for the elderly. Older children should be encouraged rather than servants to take care of them. Care should be taken to ensure that they do not feel neglected, unnecessary, or rejected in the family and society.

### 1. social demand

Meaningful social relationships help provide affection and a sense of purpose and respect. Research evidence shows the importance of social networks, including family, friends, neighbors, and community members. Even casual conversations with strangers can satisfy some of the social needs of the elderly and contribute to their happiness. A close social network can bring great benefits to the elderly by supporting their well-being and maintaining independence.

But older people are usually afraid of becoming a burden to their friends and relatives (or thought of as such). Physical disabilities, such as physical weakness, lack of independence, or poor health, reduce the ability of the elderly to maintain relationships, thereby contributing to their social isolation.



These barriers also limit their social skills due to vision loss or hearing loss. The couples participating in the study expressed their willingness to stay at home as much as possible. When all they need is a little care, they want to stay at home with their partner, but they are willing to go to a nursing home when they need advanced care. However, going to a nursing home can make people feel scared, such as being abandoned, dependent on staff, no one around you who knows who you are, isolated, and no chance to talk to friends. When you live alone in your current home and become sick, problems that don't require talking to others also arise, making it difficult for you to get the social aspects of life.



*Fugura 73: Elderly social activities*

### *2.Education demand*

A common misconception about learning in later years is that older people cannot be good students. They joked: "You can't teach old dogs new tricks." But I'm afraid that's not right. Of course, the elderly have always known this, but now we have the science to support it. Although young people are quick-thinking and capable of calculation and can generate new ideas such as rapid shooting, scientists have found that older people are more reflective and philosophical.

It can be said that young people are not better students or better thinkers. They handle things in different ways. Education can help them reassess their lives and open up more ideas. In our aging society, what is increasingly valuable is recognizing the multicultural model of life, aging, and death.

In addition to physical care, they also need psychological care. In old age, their nature will change, and there will be a tendency to stimulate. Because of the loss of their spouse, their lives have become miserable, and they feel insecure. Therefore, I hope that family members will adapt to them and take care of all their grievances.



*Fugura 74: Elderly university*

### *3.Recreational activities*

Recreational activities are important to the elderly as those of other age groups and are the key to a healthy mind and a healthy life. In addition to improving the quality of life, recreational activities can also help the elderly establish new relationships, meet new friends, and improve the elderly's overall health of the elderly. For the elderly who have just undergone major surgery or live alone at home with their children living elsewhere, emotional self-management becomes difficult, and even the smallest tasks become challenging. These activities deprived them of competence, increased their self-esteem, and gave them a new look. Therefore, appropriate recreational activities can improve the physical health of the elderly and improve their mental health. In addition, participating in group activities also eliminated their need for the company, loneliness, and loneliness. Besides, it can improve mood and promote positivity.



## The needs of the young

Compared with the physical needs of the elderly, young people's needs are more reflected in the psychological aspect. Youth development research emphasizes the importance of meeting the four basic human needs: a sense of belonging and control. Independent and generous. Obviously, young people who positively meet their needs are more likely to grow into good citizens and members who contribute to their families and communities.

To summarise, then, young people were expressing four distinct, but closely related needs:

# the need for association - "somewhere to go"

# the need for activities - "something to do"

# the need for autonomy - "some space of our own"

# the need for advice - "someone to talk to"

### *The sense of belonging:*

Young people need to know that they are cared for by others and feel connected with others in the group. When young people actively participate in group activities, they can feel physical and emotionally safe. The way they need to be helped is group members understand each other through introductions, group game exchanges, and group activities. Create opportunities for mutual exchanges and develop traditions to welcome new members and celebrate personal thinking of ways to involve as many family and community members as possible in the event.

### *The sense of control:*

Young people need to feel and believe in their ability to solve problems and meet challenges to develop self-confidence. Young people can acquire skills to make positive career and life choices. Assist young people in finding resources and explore their four-health club plans and activities. Provide project learning experience. Set an example and teach them that failure or setback is not a shame, but a part of the learning experience to be fair and consistent in enforcing the rules and providing feedback.

### *The sense of Independence:*

Young people need to know that they can influence people and things through decisions and actions. By exercising independence, young people will mature in self-discipline and sense of responsibility and learn to understand themselves better. Our society needs ways of providing help to allow young people to lead simple tasks before completing more difficult tasks. Recruit, train, and support young people who are ready to take on more responsibilities. Unless you really need help, please don't rush in and encourage young people to overcome difficulties independently. Encourage, motivate, and praise members who have completed their leadership roles.

### *The sense of Social identity:*

Young people need to feel that their lives are meaningful and purposeful. You need to connect with the community and learn to give back to others. Our society needs a comprehensive service plan to meet their interests and abilities, rather than the community's needs to arrange visits to local attractions and have the opportunity to participate. Encourage young people to consider others' feelings to establish counseling opportunities so that young people can learn from others.



### *Socail relationship:*

Young people want to be able to discuss the perplexities of their lives with adults they trust. If they cannot find a "trustworthy" adult, young people will feel that the problem becomes worse and more difficult to solve. Teenagers believe that the main "interpersonal relationship" needs to be divided into three categories:

# One-on-one intimate relationships, usually involving "best friends" or boyfriends and female friends.

# Peer-group relationships, including bullying and accepting or rejecting "groups."

# Relationships with parents and the family, especially older teenagers, require autonomy and independence.

Many young people interviewed believe that it is essential to understand the causes of tension and conflict and get the opportunities-to stand in a neutral position and listen to sympathetic opinions.

### *Personal advice:*

Similarly, young people made a list of "problems" they usually face and seek independent advice: "People you trust, people you can talk to about these things."

In addition to interpersonal issues, young people have also experienced "police harassment on the street" and "pressure of school exams." "Legal disputes," "worries about contraception and pregnancy" (especially having sex while drunk), "getting benefits," and "getting the right advice on future careers and jobs." "Someone listens to you," a confidential and non-judgmental method, is therefore regarded as a central demand.

### *Personal future and structural needs:*

Young people are deeply anxious about their future-they always focus on the need to make the right career choices, make the most of the current opportunities, and correct the "mistakes" they made in the early years. These issues can be considered from the perspective of young people's structural needs who are actually or about to live independently in the world. They need more experienced guidance in this regard..



*Fugura 75: Young people's doubts about the future*



## The Advantages of the old and the young

### The advantages of the old

It's easy to equate aging with a full-scale recession, but getting old is not all bad news. The elderly have a wealth of skills and experience, and they have survived situations that no one else can even imagine. But when they start to need care and support, we will continue to ignore these lifelong experiences.

With the increase of age and the accumulation of life experience, our knowledge and understanding of the world will become deeper and deeper, thus generating wisdom. Research has found that although certain mobility indicators of intelligence (such as processing speed and working memory) have declined, older people perform better than younger and middle-aged people in intelligence assessment. The definition of wisdom typically reflects the knowledge gained through experience, the ability to understand things that others cannot understand, and good judgment. On the other hand, due to age accumulation, the elderly will have a deeper understanding of professional knowledge and skills.

The elderly have consistently performed well in attention span, persistence, and thoroughness of concentration. It was found that 95% of the elderly do things "in an orderly manner." Older people can usually find some places that young people ignore directly.

On the other hand, young people tend to value having many options before making a decision. The decision-making process for the elderly is a bit different. They value previous knowledge (perhaps because they have more time to accumulate knowledge). And they pay more attention to expert opinions (such as health advice given by their doctors).

In terms of emotions, older people learn to be less affected by negative information to maintain their health and emotional state. They may sacrifice more accurate memories to deal with negative stimuli, so they will have a strong ability to resist negative events.

The elderly are more capable of money management and have stable economic income (pension, etc.). They have more experience in dealing with crises. These are precious wealth.

### The advantages of the young

The main advantage of young people is reflected in their young body and brain. They have sufficient physical and mental power to complete things more efficiently. First of all, physiological factors in cognition determine young people's learning ability, reaction ability, accepting new things, and multitasking ability have certain advantages. It seems to use cognitive resources more effectively when completing important tasks.

They are more receptive and adaptable to new things. They have more divergent thinking, and this ability makes them more creative. On the other hand, our physical ability is a process that first rises and then declines. We reach the peak of physical strength when we are about 20 years old, and then gradually decline. It matures at the age of 40 and then gradually ages. Their physical condition makes their reaction power faster. It is especially obvious in sports and movement.

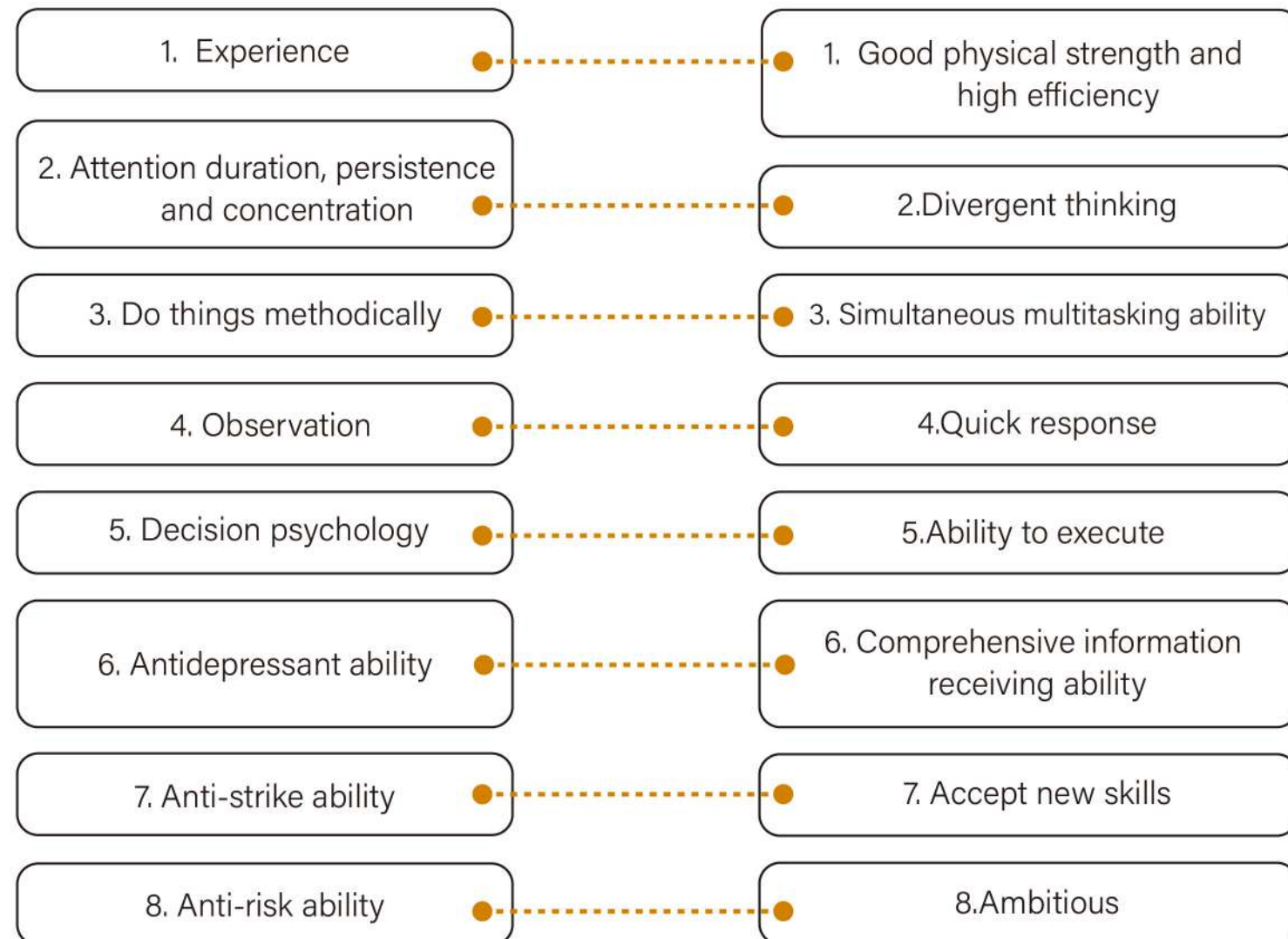


## Amplify the advantages of two groups

Correspondence between the advantages of the elderly and young

### OLD

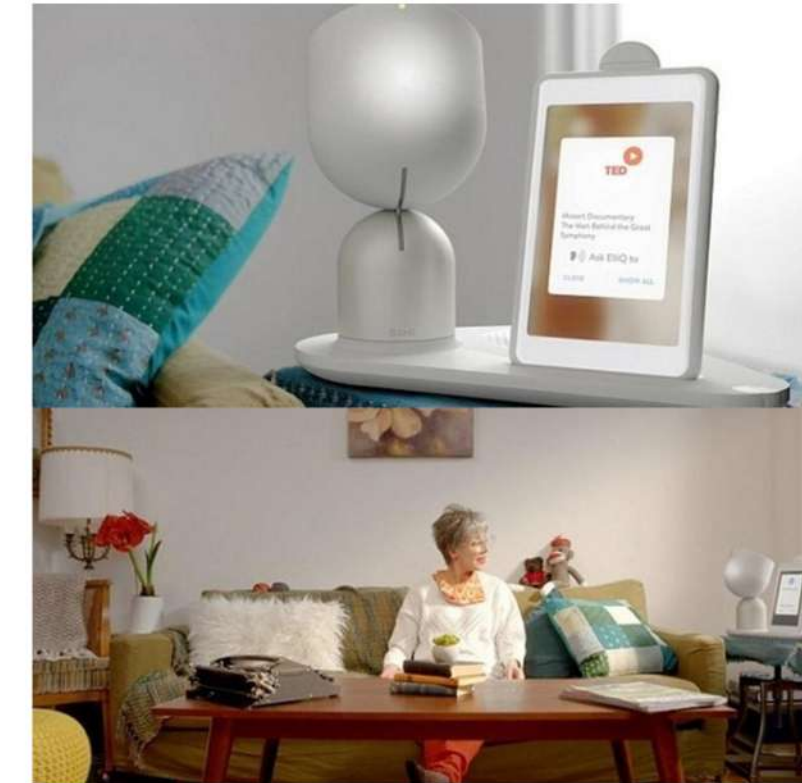
### YOUNG



## Market scenario

Family care

Us: new surveillance system



Target user : housebound elderly

### Purpose:

Pay attention to the elderly accident monitoring, improve the safety of the elderly at home. There are also considerations of emotional companionship in the elderly.

### Disadvantage:

Some older people may feel defensive and feel that their behavior is being monitored, which is offensive to them.

Figure 76: User usage scenario

### Content:

The system consists of an internet-connected computer, television interface, telephone and a series of sensors. These sensors are carefully placed in key areas of the elderly's activities, such as bathrooms, kitchens, entrances and bedrooms, to monitor their homes and record their behaviour. If there is no movement in the home for some time or the door sensor is turned off at an unusual time, the system will alert the family. Through the TV interface, family members can send short messages, weather reports, humorous jokes or warm family photos to the elderly.



## Voice Smart Speaker



Figure 77: Product display drawing

### Content:

Let the machine have human-like capabilities in the voice conversation. Built-in fun corpus system, providing services such as chatting, jokes, and enriching the lives of users. Different from the standard mode, it has a directional design for the elderly in terms of sound, content and interactive experience. You can also use voice to control common household appliances.

**Target user :** housebound elderly

### Purpose:

The main emotional and life of the elderly company. Hope to use the form of artificial intelligence to add more fun to the life of the elderly.

### Disadvantage:

There are a lot of these kinds of voice intelligence products on the market, but in fact the technology is not very mature. Older people also have difficulty using digital devices.

## Elli Q robot



Figure 78: Product display drawing

### Content:

This robot is designed as a robot + a detachable tablet computer, providing more functions and richer interaction methods. The screen provides the elderly with the necessary information, text, images, etc... Simultaneously, the robot body uses LED diffused light to express delicate emotions, and the robot's head can make various anthropomorphic actions in a friendly and affectionate manner. Elli Q can decide whether it's the right time to wake up and suggest the user do an activity, such as listening to music or watching a video.

**Target user :** housebound elderly

### Purpose:

A companion robot specially designed for the elderly, focusing on the emotional and life companionship of the elderly. This robot can use artificial intelligence technology to understand the preferences of the elderly at home and help those elderly who are not sensitive to new technologies play social networks and video chat.

### Disadvantage:

Very thoughtful, but still feel that artificial intelligence can not replace the emotional company of human beings.



## Genesis Emergency Cell Phone



Figure 79: Product display drawing

### Content:

Genesis Emergency Cell Phone is designed to be a small, simple emergency cell phone for the elderly and children that will let families know immediately in the event of an accident.

Target user : Elderly

### Purpose:

Help the elderly to remind the daily events, more focus on the elderly emergency help.

### Disadvantage:

Some basic needs of the elderly are taken into account, but the function is relatively simple.

## Atlas



Figure 80: Product display drawing

### Content:

The purpose of Atlas companion Furniture design is to reduce loneliness at home and provide a warm home for the post-90s empty-nesters through personification as a design tool.

Target user : housebound elderly

### Purpose:

Pay attention to the elderly accident monitoring, improve the safety of the elderly at home. There are also considerations of emotional companionship in the elderly.

### Disadvantage:

Some older people may feel defensive and feel that their behavior is being monitored, which is offensive to them.



## Mobile app analysis chart Pillboxie



Figure 81: Product interface

### Content:

This app was designed and created by a registered nurse to make remembering to take medications easier. Owners receive administration alerts even if their devices are in sleep mode. When it's time to take a medication, the device emits an audible alert. The user then merely checks off the dose in the app. The app is easily customized to accommodate any number of medications and daily dose times.

Target user : Elderly with health needs

### Purpose:

Help the elderly to take medication management. Make drug reminders more convenient and more life-like.

### Disadvantage:

Needs an interval program for occasional medication, like: take this pill for X days, beginning X date and finishing X other day. Please include something like that because not all the medication it's forever.

## Words With Friends 2 – Free Multiplayer Word Games



Figure 82: Product display

### Content:

This popular Scrabble-like game is an ideal way for seniors to maintain their cognitive health. The screen displays the board and provides a list of letters, which are used to form words. The game keeps track of scores and provides new letters as needed. Older adults can play alone, with friends or loved ones, or as members of competitive teams.

Target user : Elderly

### Purpose:

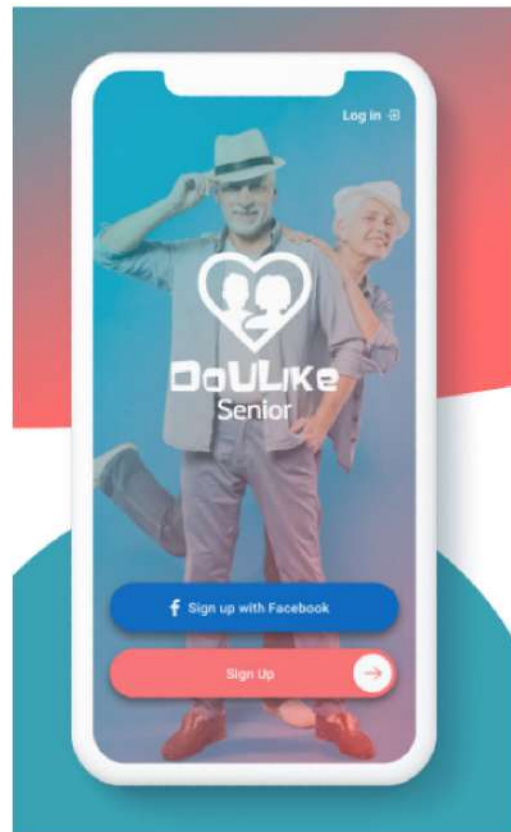
Stimulates cognition, enhances mood and enhances security in older adults. Older persons face a variety of challenges as they age, many of which can be mitigated with the help of professional home carers who provide quality home care.

### Disadvantage:

I enjoy wwf but am frustrated with all the ads. They even pop up in the middle of a play. Keep them between plays. Also, I've been locked out of solo games all week. I played the 1st one, which is acknowledged, but it won't let me continue.



## DOULike senior



Target user : Elderly

### Purpose:

Help older people make friends in newer ways. Expand the social scope of the elderly. Enrich the daily life of the elderly.

### Disadvantage:

The software is poorly regulated and the user experience is complex.

Figure 83: Product interface

### Content:

Doulike Senior is amazing iOS dating app for senior citizens. The challenge was to design an iOS application that creates the right mood and meet requirements of design for elderly. We did it with the light colour scheme, a simple user interface and special UX solutions.

## Free Senior Discounts + Coupons



Figure 84: Product display drawing

### Content:

Tracking down discounts and sales isn't always easy. It can be time consuming and no matter how hard you try you can miss some great deals. This app will tell you which stores, hotels, and restaurants offer discounts for seniors. This is the most comprehensive guide to businesses in the United States that offer special discounts to seniors age 50 and older.

Target user : Elderly who have the desire to buy

### Purpose:

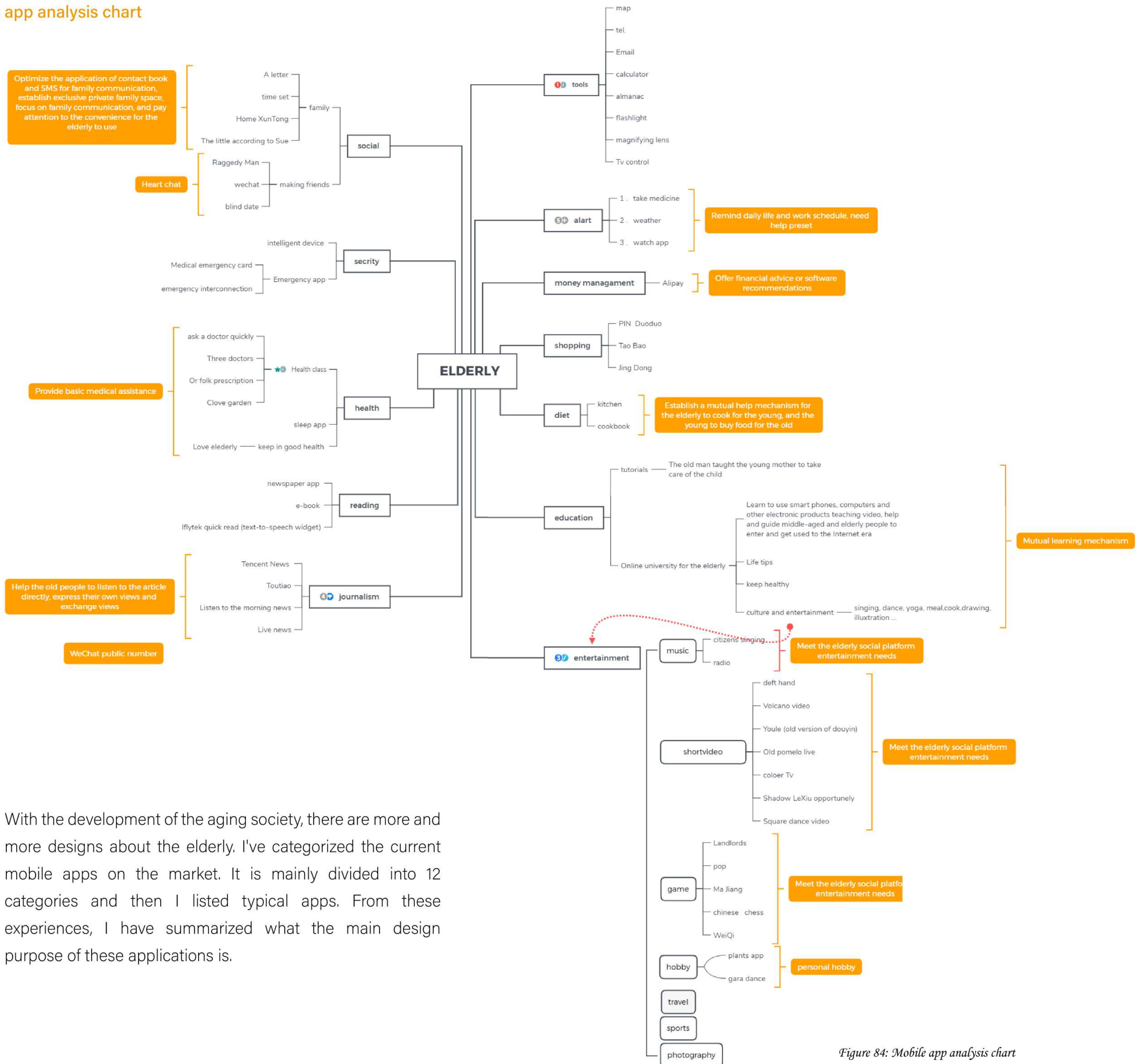
Save money at your favorite restaurant, grocery store, movie theater, etc. Help the elderly live more interesting lives.

### Disadvantage:

The website information is not unique and the information provided can be found on other websites. Operational experience is also more complex for the elderly.



# Mobile app analysis chart



With the development of the aging society, there are more and more designs about the elderly. I've categorized the current mobile apps on the market. It is mainly divided into 12 categories and then I listed typical apps. From these experiences, I have summarized what the main design purpose of these applications is.

Figure 84: Mobile app analysis chart



## Case study

### 1. Entrepreneurship for the elderly

"Founders over 50" project, a free pilot project, aims to help older entrepreneurs start their own businesses for the first time, guiding them from business planning to communication basic knowledge. This initiative will bring like-minded seniors. People gather together and realize that many people have the same energy and enthusiasm as young people but have fewer opportunities to gain support networks and develop new ideas.

The "Lifetime Street" plan to support elderly residents in developing new businesses and creating new intergenerational community spaces. Bologna fosters a cross-generational "start-up business" culture that connects people of different ages, wealth, and skills with common interests to create or support new opportunities, businesses, or networks.

London also supports old Londoners in operating community assets-demonstrating the feasibility of operating community assets, such as local libraries, park buildings, community theaters, and nurseries signed contracts with community benefit companies, owned and operated by old Londoners or intergenerational teams to achieve mutual benefit.



*Figure 85: Two generations of entrepreneurs*

### 2. New Apartment for the Elderly

In the Netherlands, "anti-aging apartments" are also equipped with public restaurants, bars, and movie screenings. It also includes an initiative to invite students to live in the same development zone for free, in exchange for 30 hours a month to become "good neighbors" for older residents. This not only encourages communication between the two generations, but it also allows older people without family support to receive mild help without having to rely on more formal care.



*Figure 86: New apartment service*

### 3. New Service Community

There are some new buildings in Italy for the elderly to live in. Young people can provide some services, but it is more like a community. While choosing the right housing provides new opportunities to participate in the life of citizens. In the city and attracting others to come back as active city dwellers to enjoy their old age will be crucial. This will promote cooperation between the two generations as part of the business and start-up corporate culture, providing flexible and affordable workplaces for seniors to build programs to share skills and expertise with young entrepreneurs. Promote cross-generational support networks-create community meeting places, work together, guide, support, care, and volunteer, and bring together the elderly and young in new development projects and existing projects.



#### 4. Parenting care and loneliness in old age

With new family units, new work models for both parents and rising childcare costs, it is expected that the older generation will naturally play a more important role in care and support from grandchildren.

At the same time, the loneliness and isolation of the elderly have also been fully proven. This is an important opportunity as well as an opportunity for mutual benefit-by breaking down barriers and promoting local support networks, bringing the younger generation and the older generation together.

Hackney 's NANA cafe project has proven this. The project specifically recruits elderly retired women (Nanas) who are on the verge of social isolation to cook in community cafes. Facts have proved that it is very beneficial to find a job and participate in social activities, but this cafe quickly becomes a valuable support structure for young local mothers. They come here to enjoy lunch and enjoy the rest time they deserve, while the nanny helps look after kids.



*Figure 87: The old socialize with the young*

#### 4. Combine kindergarten with senior activity center

Transform the kindergarten into an activity center for the elderly, expand the functional connotation. The Village Senior Citizen Activity Center has established a civil dispute mediation team, a voluntary sanitation and cleaning team, and a hydropower technician team, etc., to repay society by volunteering for the people.

#### 5. Food service system

The emerging convenient food delivery service has become the enjoyment of the elderly in society. Food packaging and delivery service companies such as Blue Apron in the United States and Aarstiderne in Denmark allow elderly users to cook with fresh seasonal ingredients at home even if they cannot go to the supermarket by themselves.

Shared dining trucks, such as the Meal on Wheels service in the United States, allow people to register to prepare meals for neighbors and friends and provide some help to the health and social life of the elderly who need assistance.

The elderly canteen of the service center welcomed customers. The old people are all neighbors in the neighborhood, talking and laughing when they meet, and the "pre-dinner meeting" has become a community salon. Elderly care institutions set up tables for the elderly.



*Figure 88: The combination of kindergarten and senior activity center*



*Figure 89: Special table service for the elderly*



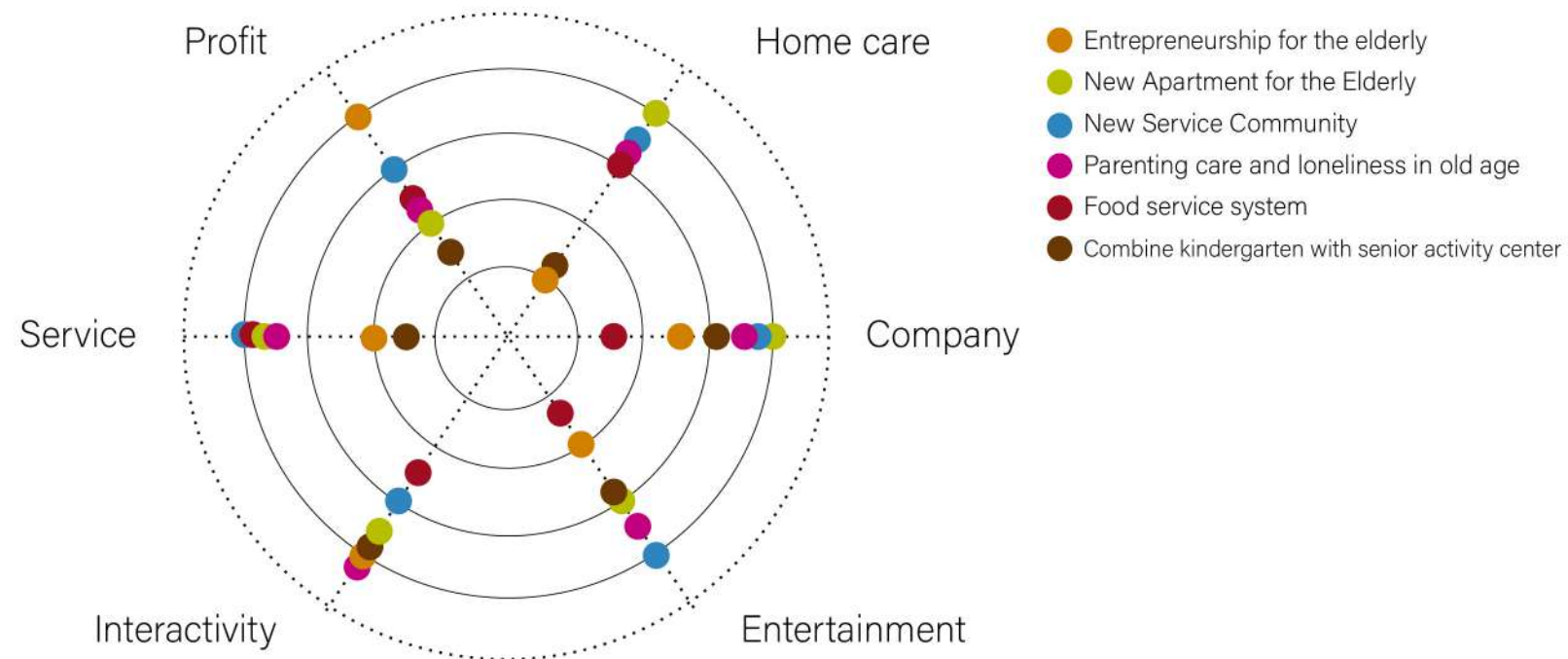


Figure 90: Competitive Product Analysis Chart

Several models currently exist entrepreneurial alliances, community service, new apartments for the elderly, and childcare.

I think the main problems with the current models are:

1. The audience is relatively small, not everyone can participate, and some measures may only be implemented in a specific environment. Promotion is difficult.
2. Although the program hopes to establish a connection between the elderly and the young. However, attractiveness to young people is not enough. Although the plans and ideas are good, if young people are not attracted to enter the circle, the effect will be little.
3. The physiological problems of the elderly, family pressure, not all families are willing to let the elderly participate in social assumptions (because of physical considerations).
4. Artificial services lack emotional factors.

## Opportunities

### 1.The role of senior citizens in the future social model

Active senior citizens play an important role in the future prosperity of society. However, there is currently a lack of opportunities to make positive contributions to local urban communities and support the economic and social networks generated by daily contacts. People are always in physiological aging and other reasons, and hold a negative attitude towards the social role of the elderly, and sometimes even discrimination. But in fact, the study found that older people have advantages that other groups don't.

Help seniors work more flexibly, learn and develop new skills, share existing knowledge, or have opportunities to integrate into society. Encourage senior citizens to receive retraining in their later life, and provide new ways of working for senior citizens in nearby communities. This flexibility can start to propose new skills transfer and guidance models between the two generations and in both directions.

### 2.win-win model

Through research, I found that although there are many products for the elderly on the market, but not many products that effectively establish the relationship between the elderly and society. I think that the needs and advantages of the elderly are different from those of the young. Can I find a cooperation or conversion model that combines the elderly and the young's advantages to make up for each other's needs? Through this kind of cooperation, a win-win situation can reach 1+1=3.



### 3.Operation method: online and offline integration

If it is an online activity blindly, it is difficult for the elderly to join in, and if only offline young people are not willing to join. Combining online and offline to find a point can transform online and offline activities. Consider offline and schools, gyms, cafes, and libraries. . . Cooperate to establish a cooperative alliance. Because the elderly still have certain difficulties with the Internet. Online may think of some ways to attract young people.



## Project

- The service system overview
- Positioning map
- The operational structure of the service system
- Stakeholder
- Journey map
- Interaction design principles for the old
- User interaction design
- The first Test
- Visual Design
- Final prototype
- Final prototype test report



## The service system overview

This is a concept of a social service system in response to an aging society. The entire platform is divided into four levels for design. The design of the first level focuses on attracting core users: the elderly and the main force of service personnel: young people to enter our platform. The attractiveness of the elderly is firstly guided by the physical and psychological needs of the elderly. Because the design is to practically solve the needs of users. Offline is based on the existing elderly service organizations to establish a more effective connection between the elderly, the young and the society, solve the needs of the elderly, and realize the social identity of the elderly. The young people are mainly attracted by interest and gain experience and life guidance in the service process.

The second level is about service processes and cooperation groups based on services. In this part, the function of the platform is concretized in the service process. It is the realization stage of the goal and the core of the social connection of the entire platform.

The third level is the database stage, and it is also the stage where the entire platform will grow over time. Not only focus on the service level, but more importantly, the quantity and quality of real-time data obtained in the service process. After the platform performs data classification processing and uploads it to the database, it enters the fourth level of the service system. The society and institutions use these data to support the development of research, and then feed it back in the services of various industries.

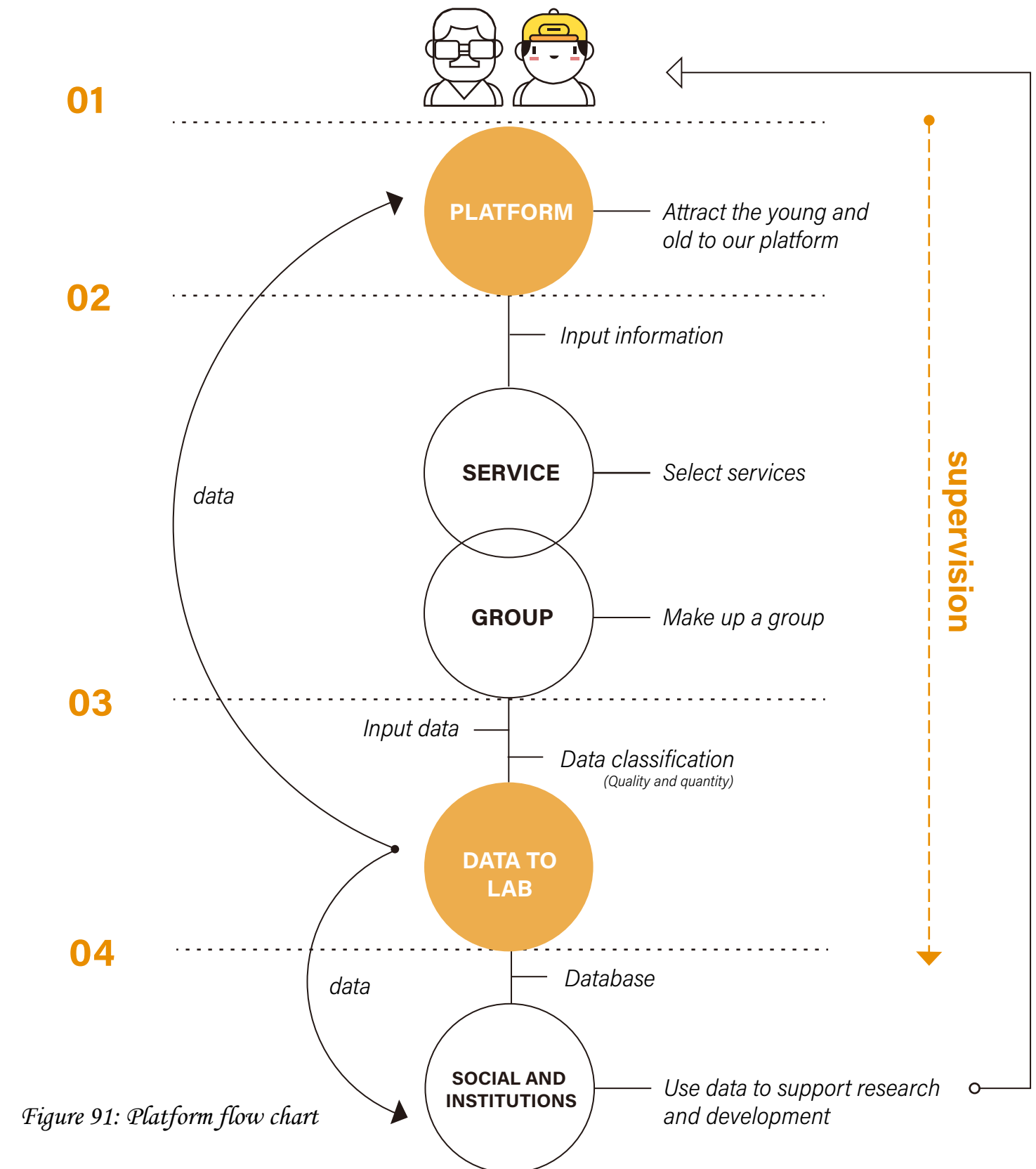


Figure 91: Platform flow chart



## level 01 - Platform attraction

### 1.Be satisfied with the old demand orientation:

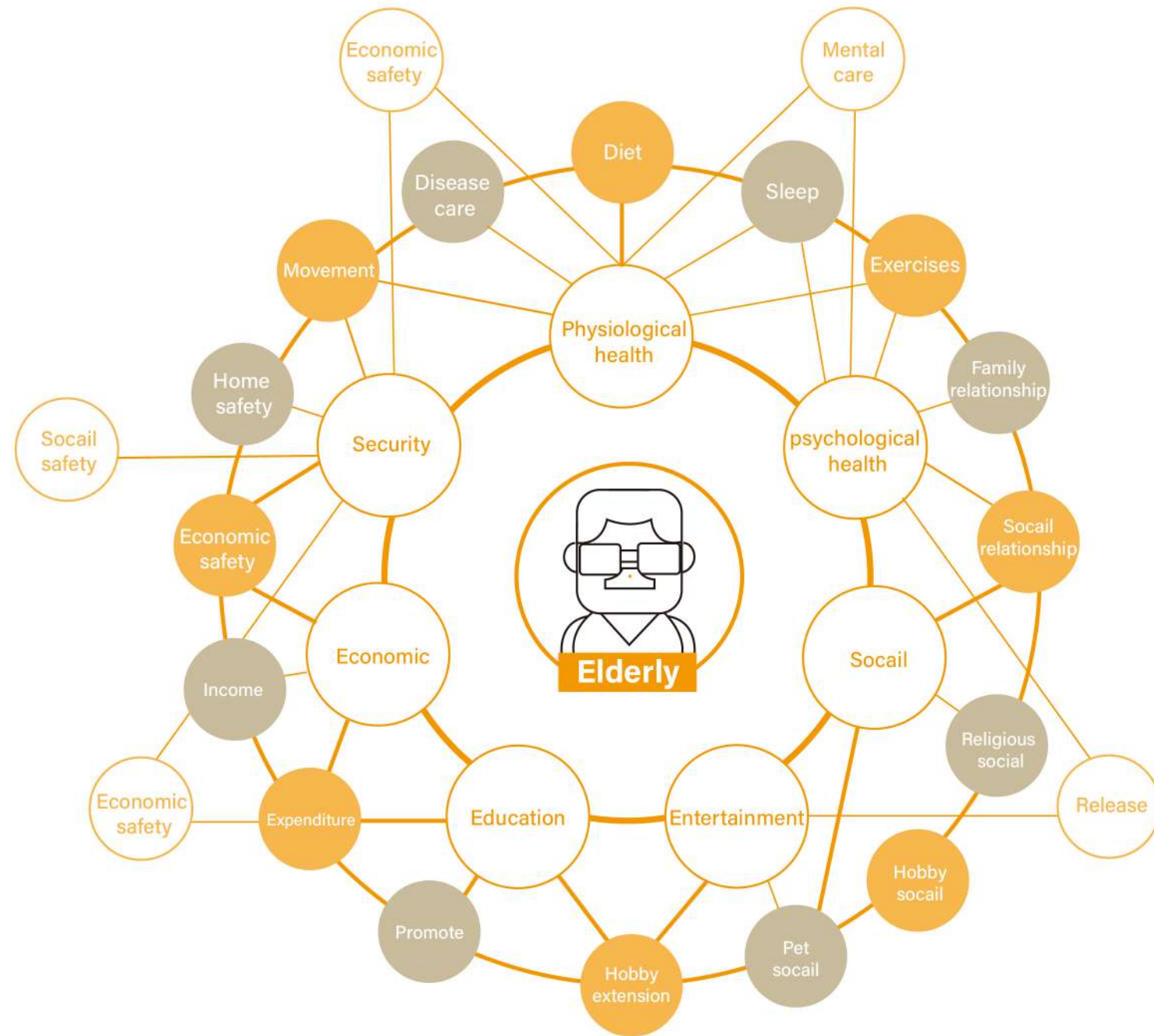


Figura 92: Demand orientation map

### 2.Motivation of the old join the platform

Business alliance

university for the elderly

service community

entertainment

new apartment for elderly

#### 1.Cooperate with existing offline senior service organizations

I want to attract the elderly to enter my platform based on the existing offline model that has been accepted by the elderly. I will combine the services provided by this platform with the service community, business alliance,entertainment, new apartment and university for elderly.

The elderly can organize these organization anywhere, as long as there is a community space. This is convenient to increase the acceptance of the elderly and reduce the difficulty of early promotion. Ensure the security of the service and reduce the difficulty of supervision.

#### 2.demand orientation

Based on the existing model, my platform is oriented to the needs of the elderly and adds an online matching model. Solve the problems of the elderly and establish the connection between the elderly and society through these services. The platform's services can simplify their life needs to the extent they are willing to pay. Many services in the market can support the daily lives of the elderly, but they cannot meet the emotional needs of the elderly. My platform service is based on artificial, is more focused on the design of service emotional experience.



### 3.Communication with young people

Another reason for attracting the elderly to enter my platform is that it is different from the existing service system. It not only attracts peers but also attracts younger groups. Compared with the physical needs, the elderly need to meet this psychological need more. They need to establish connections with different age groups in society, and the elderly want to be surrounded by young people. It brings them closer to their families and because they may think it is fun to be part of the younger generation and see how they live.

### 4.The realization of the social value of the elderly

Not all aging has negative effects. Our research also found that the elderly have many advantages that young people cannot compare. The new service system is not only to help the elderly solve their physical inconveniences, but more importantly, to help more and more elderly people realize their value and equal social status. In the service process of this service system, the elderly can not only solve the different needs of individuals, but the elderly can also provide the young people with experienced guidance and the opinions of the predecessors so that the elderly can better realize their personal social values.

## level 01 - Platform attraction

### 1.Be satisfied with the young demand orientation :

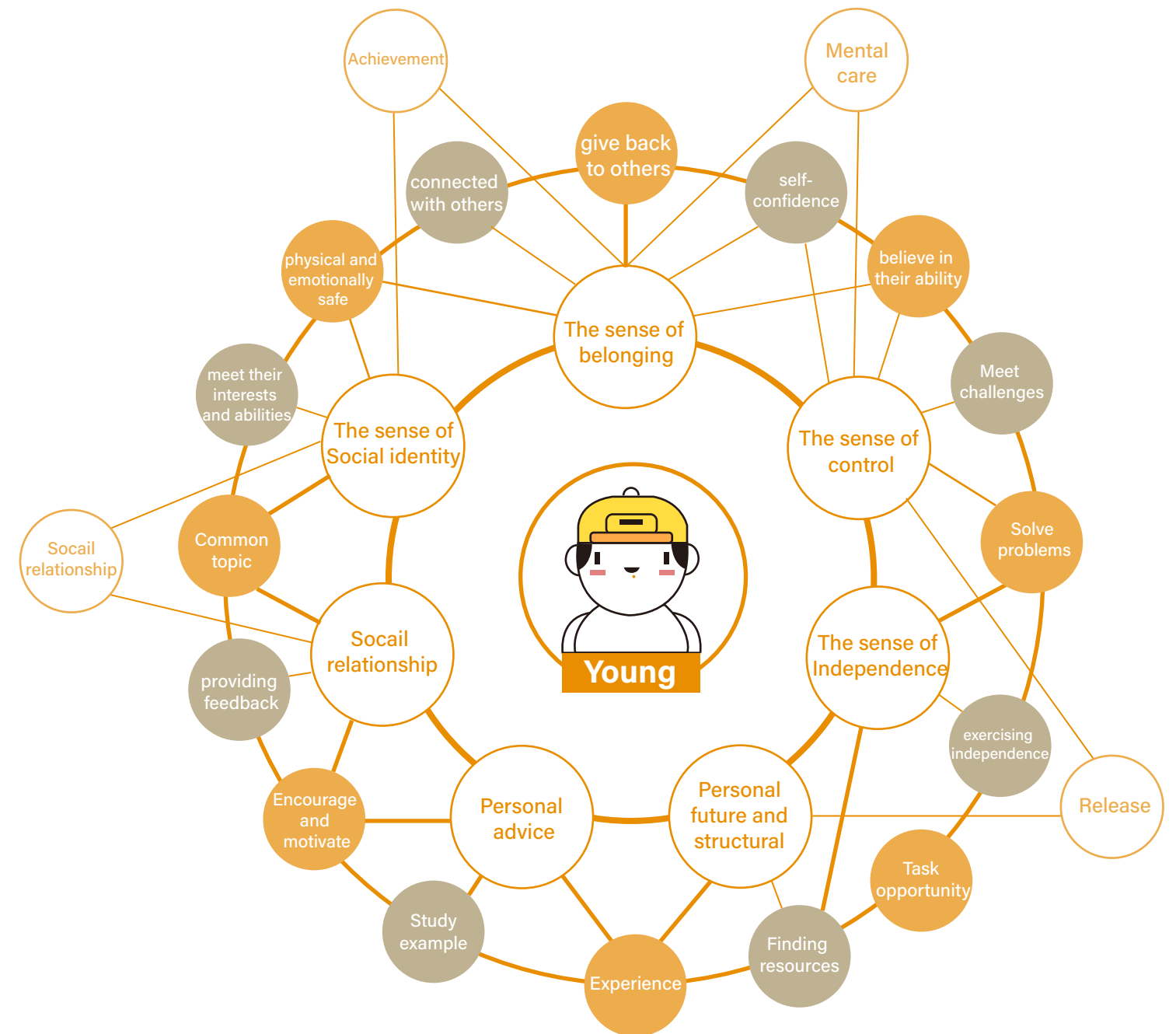


Figura 93: Demand orientation map



## 2.Motivation of the young join the platform

### 1.Demand orientation

Compared with the elderly, the needs of young people are more psychologically focused. Although young people are physiologically in a superior position, they have a little social experience, and they need more experienced guidance in dealing with many problems. Many things are that they are unwilling to share with their family and friends around them, and this has delayed some opportunities or made wrong choices. In fact, unnecessary consequences caused by these psychological reasons can be avoided.

They need a platform to help them establish such a connection with the outside world. They can enter the platform to provide services within their capacity in exchange for corresponding rewards. In the service process, establish valuable connections with the community and learn to give back to others. Young people are the hope of their families and the foundation for a better construction society. Our service platform's methods and opportunities provide young people with the opportunity to lead simple tasks and then complete more difficult tasks to achieve self-worth. Recruit, train, and support young people who are ready to take on more responsibilities.

### 2.Cooperation of different age groups

Many products are aimed at young people on the market, but there are not many products that establish effective communication between different ages. They can choose partners according to their interests when they enter my platform. These older partners can bring young people views and opinions at different ages.

Help young people recognize the relationship between dependence and responsibility. Independence does mean greater power and influence, but it is linked to being responsible for the decisions made and the actions taken. Expand the importance of services and recognize responsibility for the welfare of others. Help young people focus on others and take action to show that they care. Service builds bonds between young people and their communities, and doing things that are valued by others increases a sense of self-worth and competence.

### 3.Interest orientation and personal future

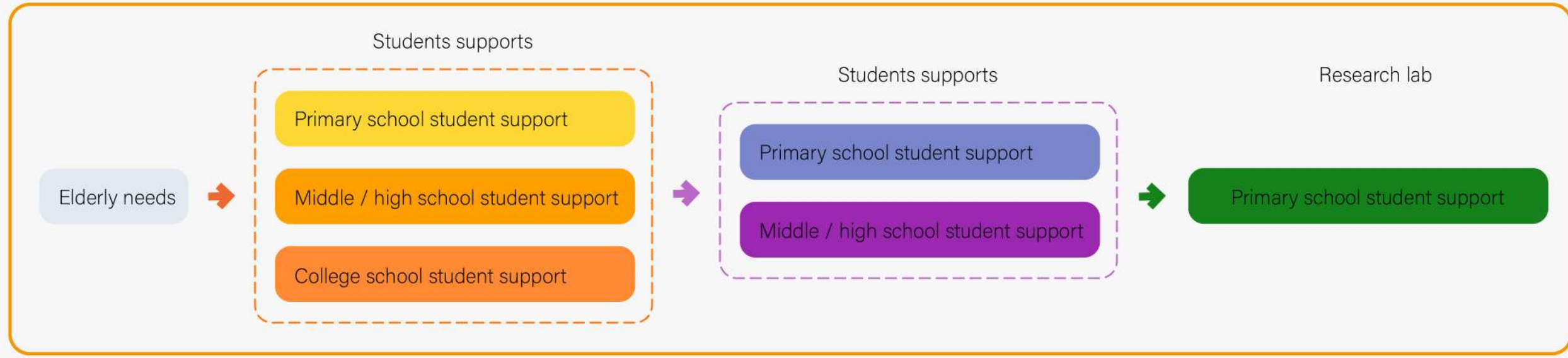
Young people gain a constructive learning experience in the process. Young people rely on the happiness they derive from their interests, hobbies, and group involvement to balance other disappointments in life. The platform offers them the opportunity to take on new challenges and learn new skills in areas of interest. Helping teenagers complete the process of experiential learning, which includes experiencing, sharing what happens, dealing with important things, extending the experience to the real world, and applying what is learned to another situation.

They can also communicate with their predecessors in the corresponding field and get more opportunities. In doing so, they will receive guidance and rules that will help their career development.

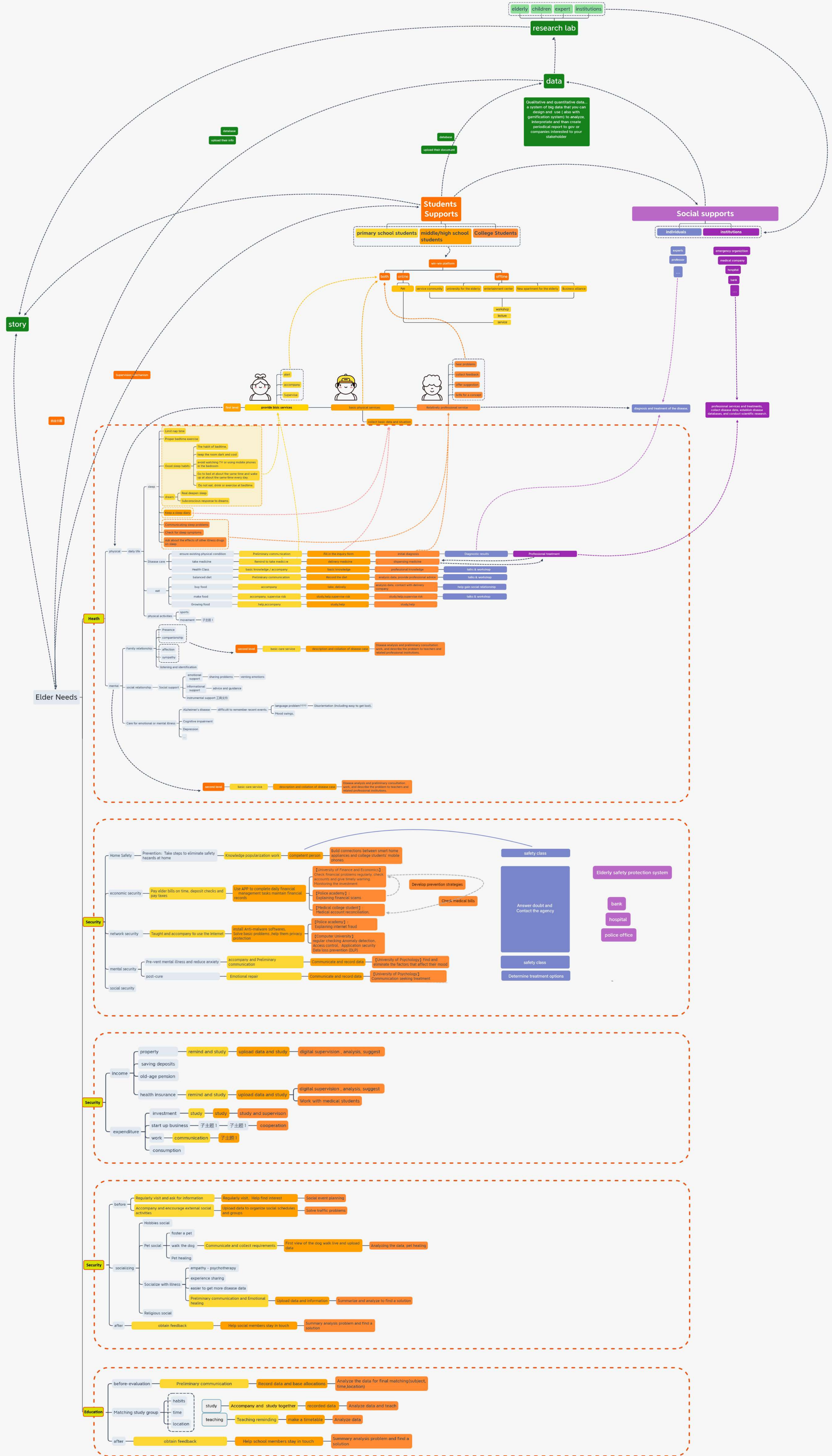


# Level 02 - service system structure

## Service process



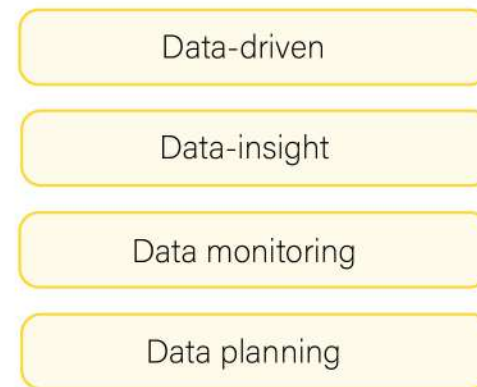
- Elderly needs
- Primary school student support
- Middle / high school student support
- College school student support
- Students supports
- Individuals
- Institutions
- Social supports
- Research lab





## Data

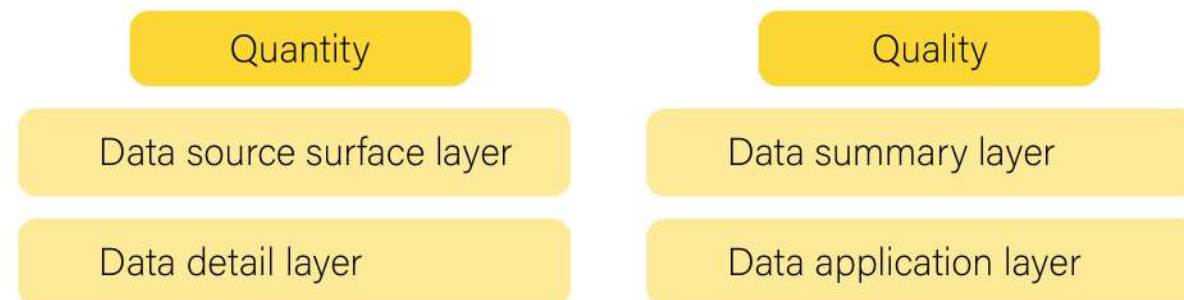
The platform data is mainly divided into four parts: data-driven, data insight, data monitoring and data planning.



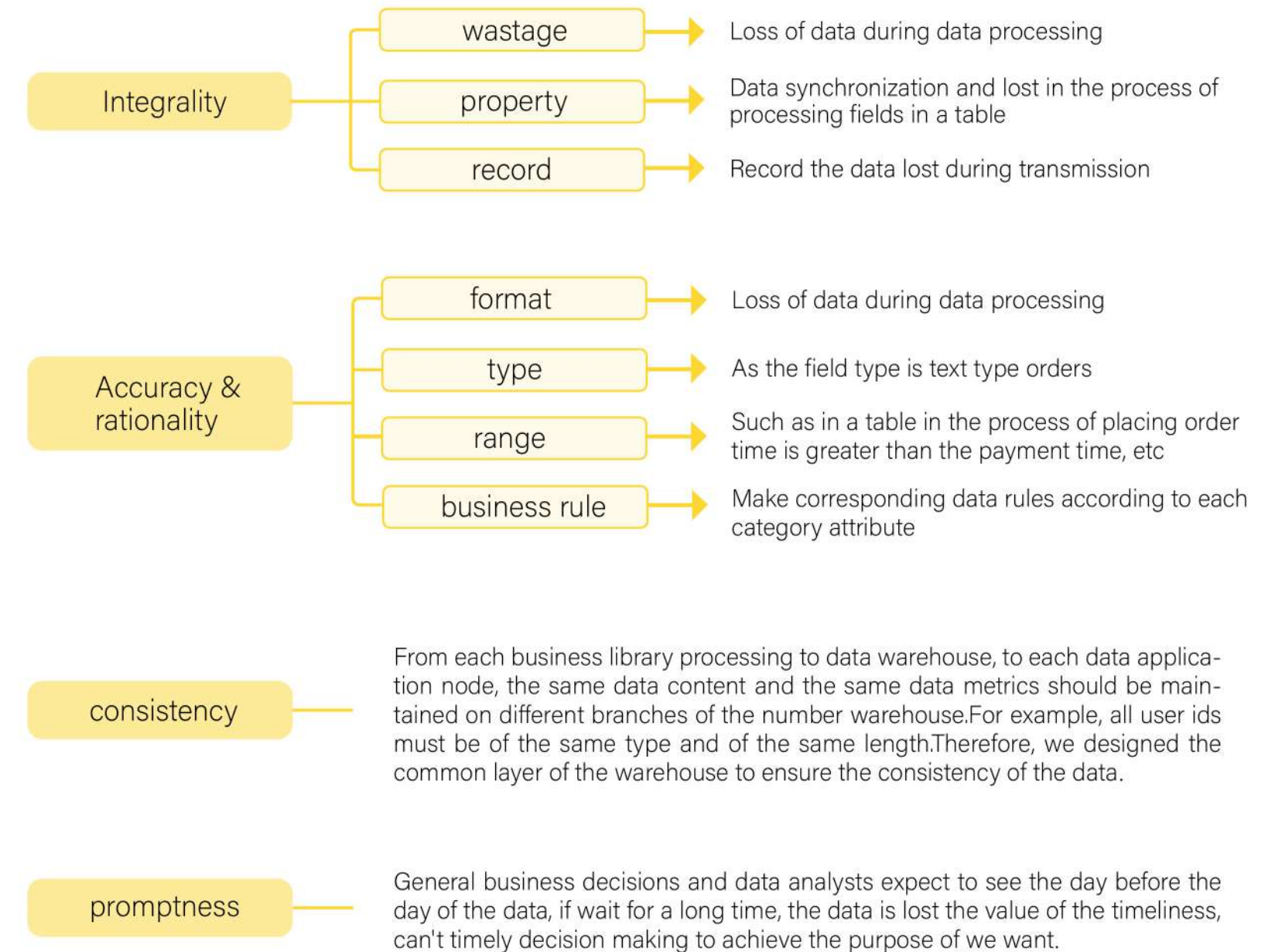
### 1. The first thing we need is to have data, which is to collect data.

Methods to collect data, such as registering personal information and selecting service products to browse keywords, service data can be collected on the server side, and transaction data can be collected in the database.

After data collection, the next step is simple monitoring. Develop data acquisition specifications, and divide data into [data source surface layer], DWD [data detail layer], DWS [Data summary layer], and DWA [data application layer].



## Data quality measures





## 2.Data monitoring

Specifically, centralized data storage is data management at the enterprise level, which involves the following three subtasks:

1. Data summary generated by each business;
2. Data processing: unified collection, cleaning and management methods (the data cleaning methods of each line of business are configured in the form of template in the enterprise data engine);
3. Global data model generation

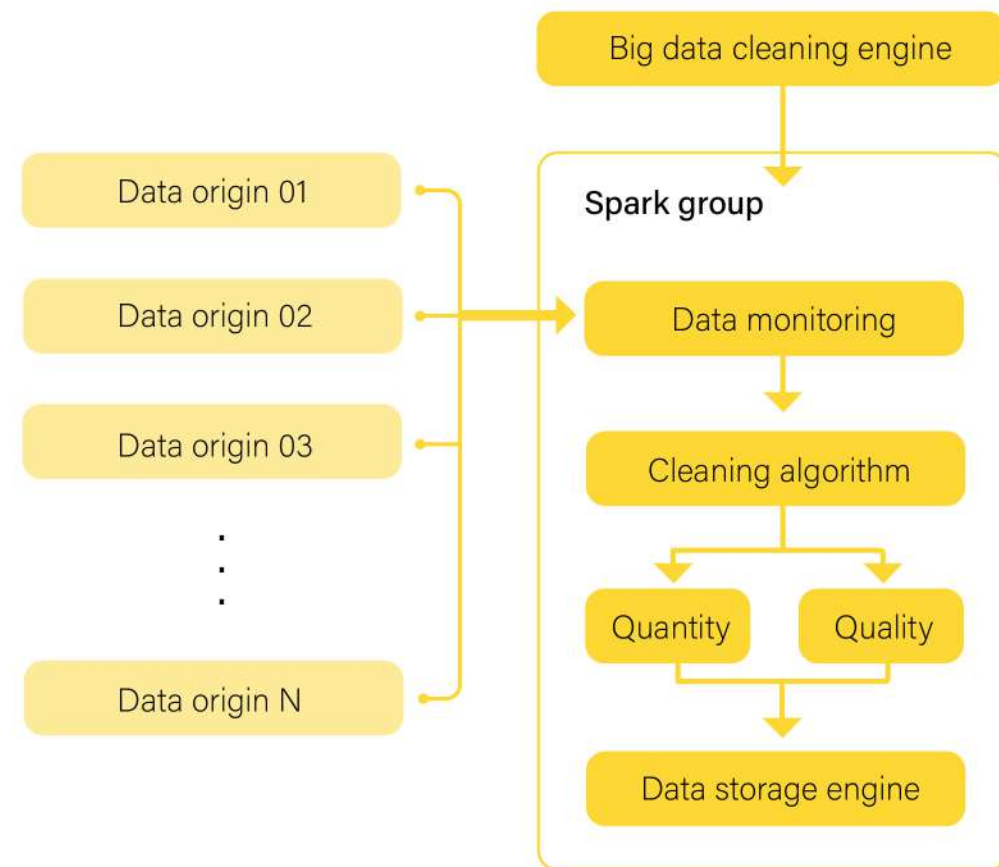


Figura 94: Data monitoring

## 3.Data application

### To the platform interior

Based on the construction of the data center, we can develop secondary data application: Internally;

1. Global user recommendation system: collect user preferences of each line of business for user recommendation;
2. Global user portrait: collect portrait data of each business line to generate user portrait of the whole company;
3. Digitalization of the company's business assets: After the above unified data of each business line, a super node can be established to compute and monitor the business data of the whole company in real time.

### External to the platform

After the Research Lab has planned the data, relevant companies can obtain the data they need in the database by category. Then apply the data to relevant research to better feed back to the society.



## The operational structure of the service system

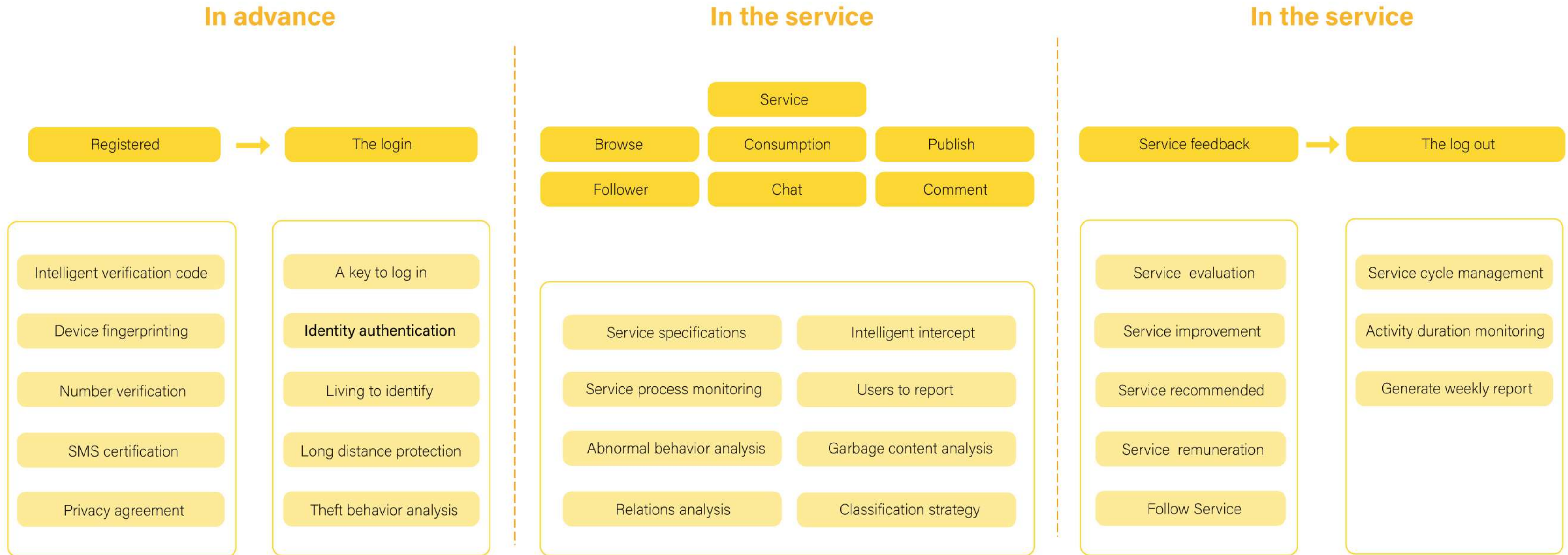


Figure 95: The operational structure map



The platform is divided into two parts: online and offline, and offline cooperation is based on existing related senior institutions. In regularly held activities, our professionals monitor in accordance with the established rules to ensure the quality of services and the safety of users.

Online platform supervision is divided into three parts according to time period. In addition to normal online behavior monitoring, this platform mainly focuses on the monitoring and improvement of entry barriers, abnormal behavior monitoring, and relationship analysis. One of the design goals when building a system should be to make it as monitorable as possible-which means minimizing unknowns. It is necessary to confirm the quality of platform users to ensure that the service is valuable to the greatest extent. Secondly, monitoring during the service process can ensure the quality of service and the safety of users.

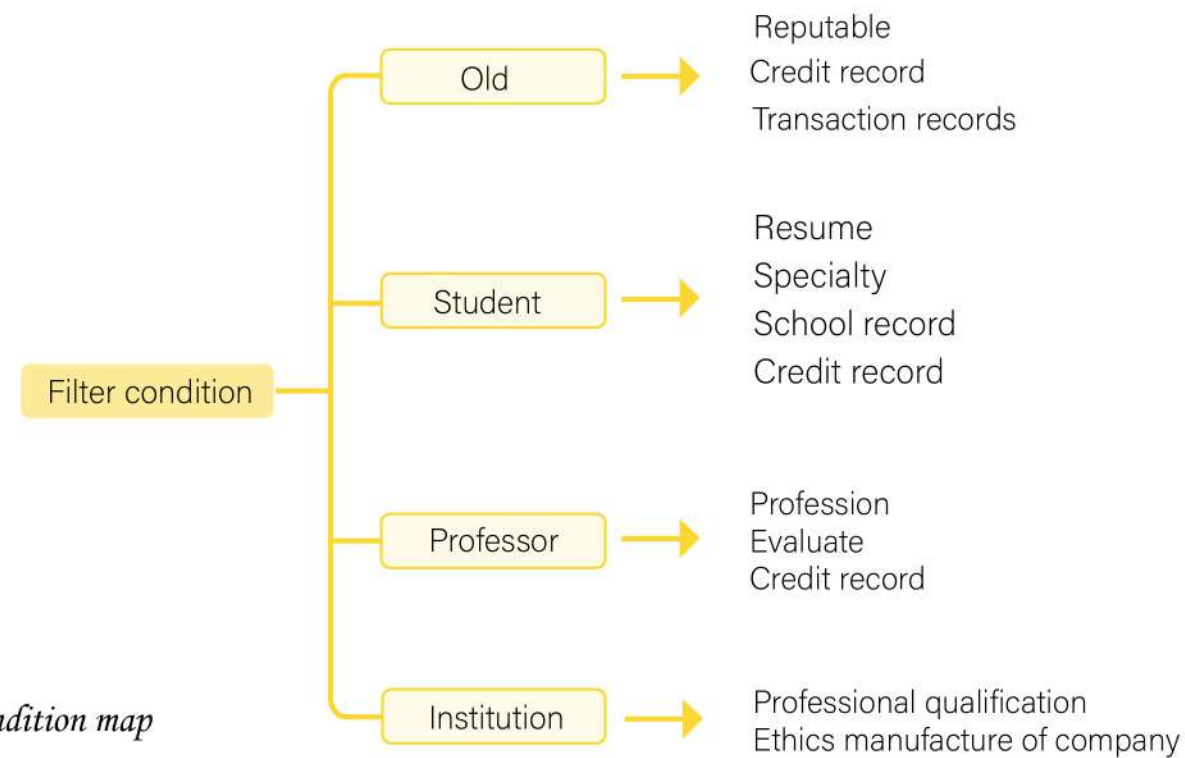


Figura 96: Filter condition map

## Stakeholder

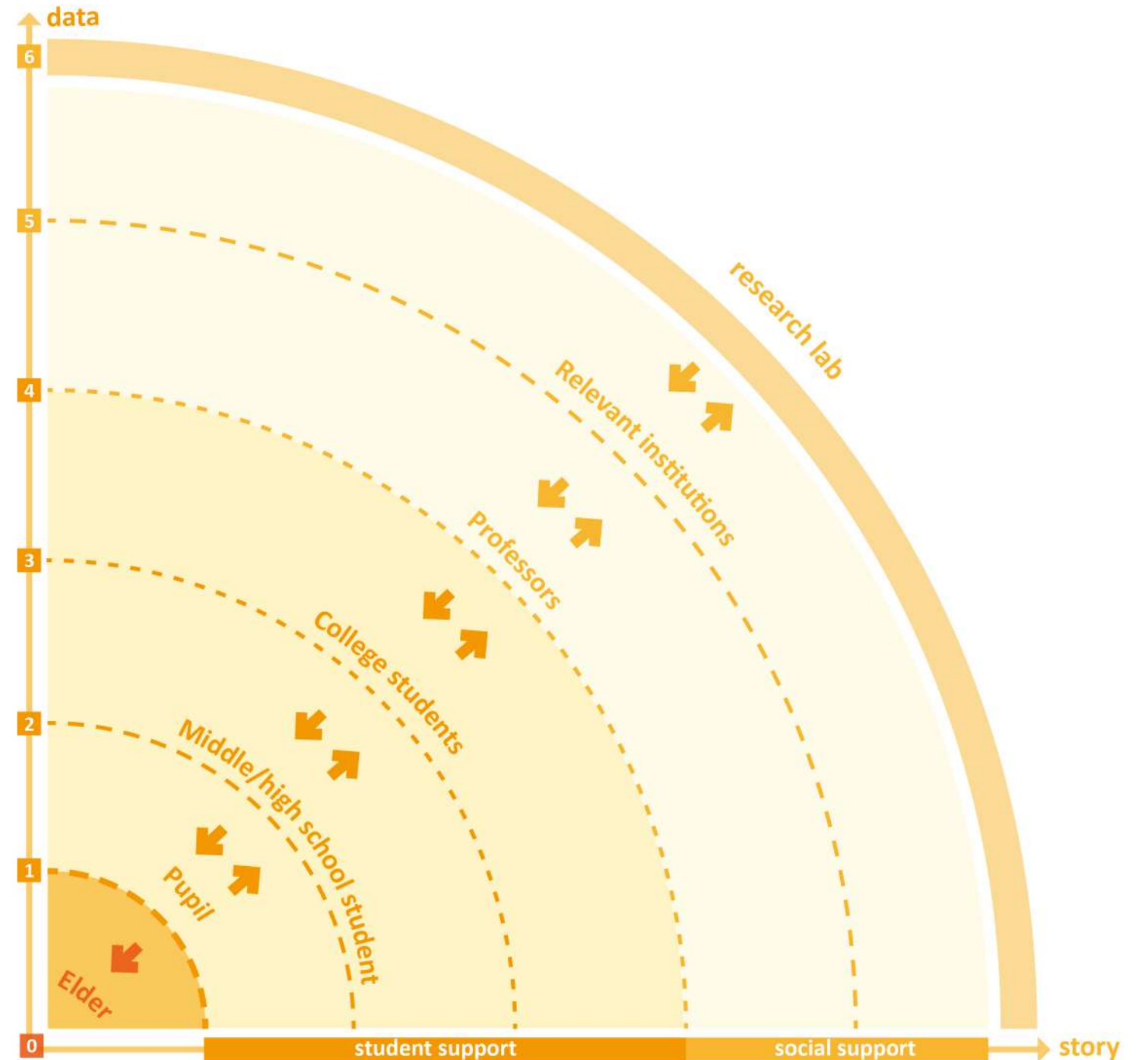


Figura 2: stakeholder map



### **Elder**

The elderly are the origin of the entire service system. Expand our service system based on the needs of the elderly. In the process of service, the elderly will receive support from students and society, not only limited to basic services around daily life, but more importantly, the emotional experience they get in the process. They are not only the customers being served, but more importantly, he also feedbacks his advantages to others during the service process. Give them a simpler way to integrate into society and a platform to realize their value.

### **Young people**

Young people are stakeholders who are closer together. Young people are in a middle position to convey the connection between old people and society professional staff. In the process of platform services, they deliver services to realize more social value and establish more communication with society. More importantly, in this service process, they gain what they lack most-experience. In life, they rarely have such opportunities to use the knowledge they have learned from books. In practice, they can not only apply the knowledge they have learned, but also get more guidance, opportunities, and contacts with seniors in the field of interest.

### **Professor**

The professor is at the next level of the young group. Because young people have already shared the basic needs of the elderly. Moreover, young people with relevant experience can describe the problems of the elderly that they cannot solve more objectively and professionally. It is easier for professors to understand the needs of the elderly and provide solutions in a limited time, instead of spending more time on trivial things in the early stage. On the other hand, some professional people are also isolated, and many times they need to understand the evolution of events better. The description and data transmission of students' majors are essential.

### **Relevant institutions**

On the one hand, institutions can obtain timely updated customer data on the platform to support the development of their research. On the other hand, the platform also brings more customers to the organization. The data of these customers can be tracked, and organizations can use this data to provide services more easily. In the service process, talents in the organization and related fields are contacted to realize the talent reserve.

### **Research lab**

Based on the database organized by the platform, you can watch the various changes in the society about the elderly and young people in time. Studying these changes and cultures also gives people suggestions on how to live better. The culture of the relationship between the elderly and the young will change over time. In the entire platform service process, one question is linked to the elderly, young people, and experts. In other words, the same question we get is at least three different age groups.

At the same time, the data will organize every story of cooperation between the old and the young, because every story can be a case study for others. This data allows the platform to grow over time.



# Journey map

## Student groups Service

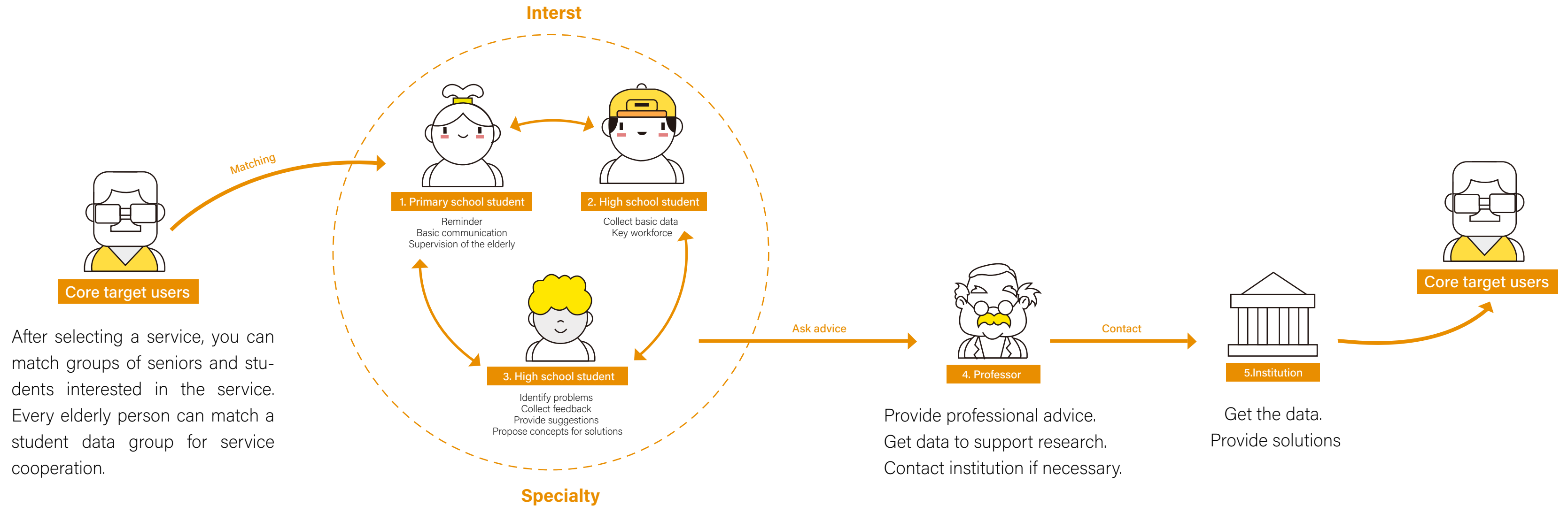


Figure 98: Journey map



## Interaction design principles for the old

Designers should provide users with additional compensation in applications aimed at the elderly. There should be appropriate introductory functions to introduce users to functions they may not be familiar with.

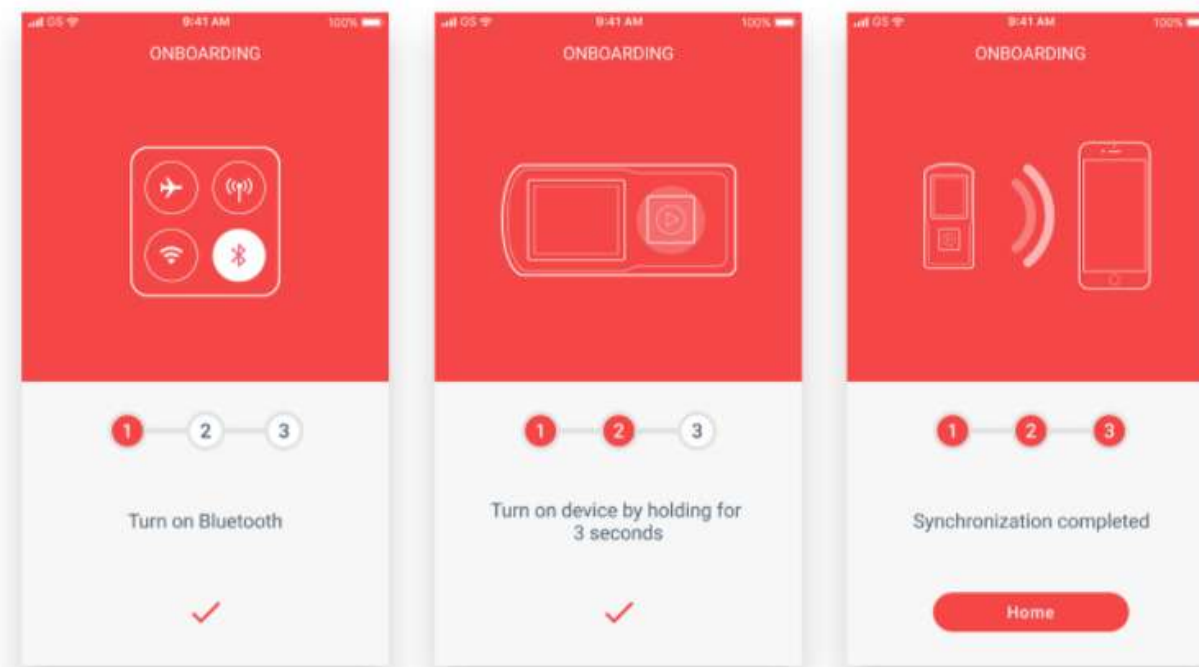


Figure 99: Introductory page

### 1. Simplifying the navigation structure is a good starting point.

Strictly follow usability best practices (minimize sub-levels in navigation, keep menus as individual functions, etc.). Keeping the "back" function and "home" navigation easy to access can also be used as a safe point on the interface.

### 2. Introduce product features gradually.

The gradual introduction of product features (gradual disclosure and minimalist design) can help prevent cognitive overload caused by slower mental processing speed in the elderly. The designer should also ensure that the attention of the elderly is not distracted by multiple tasks or part of the screen.

### 3. Provide clear feedback on progress and completion.

By providing clear progress feedback and reminding the user of the final goal and other methods to solve the elderly brain memory problems. If the task needs to store previous actions, it is also helpful to avoid splitting it into multiple screens. By including reminders and tool tips, even familiar operations can become more user-friendly.

# Use subtitles for any voice/video.

# No text is overlaid on images or graphics.

### 4. Gesture

When designing for the elderly (especially those over 70), keep the gestures easy to perform. Forget complex gestures that require more than two fingers (these fingers are difficult to master regardless of age). Simple horizontal, vertical or diagonal movements are fine, as they are all natural movements. However, please avoid combining gestures with fast movements, difficult positioning, or multiple gestures that require the use of hands or more than two fingers.



## 5. Visual element specification

As people get older, their vision usually undergoes many changes. If there is a choice, many older people will use reading glasses or choose a larger font.

The size of text and buttons should be kept large. Basically, everything that should be read or clicked should be scaled up. The font should be at least 16 pixels.

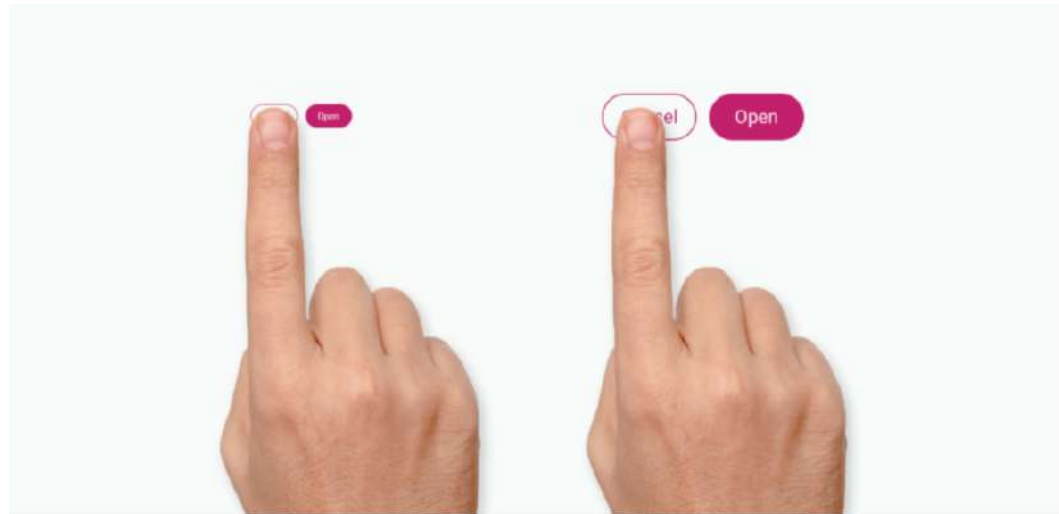


Figure 100: Comparison of UI design for the elderly

- # Important interface elements should avoid blue.
- # Don't use color to convey information.
- # Red and green are the most difficult to distinguish between color blindness.
- # High contrast is best, especially within the color values .
- # Use an online visual impairment simulator and convert the design to grayscale to check whether the design is clear, check the design.

## User interaction design

The biggest key to supporting the operation of this system is emotional connection. When designing and developing products to support elderly end users, it is especially important to overcome their fears and enable them to receive technical assistance and mobile devices in their lives. Designers should provide users with additional compensation in applications aimed at the elderly. There should be appropriate introductory functions to introduce users to functions they may not be familiar with.

### Introductory tutorial

Young people are digital natives, and they grow up with the advancement of electronic products. The evolution of the media is also guided by their needs. However, the elderly are more like a freshman in the media.

So it is particularly important to add the part of the introductory guide.

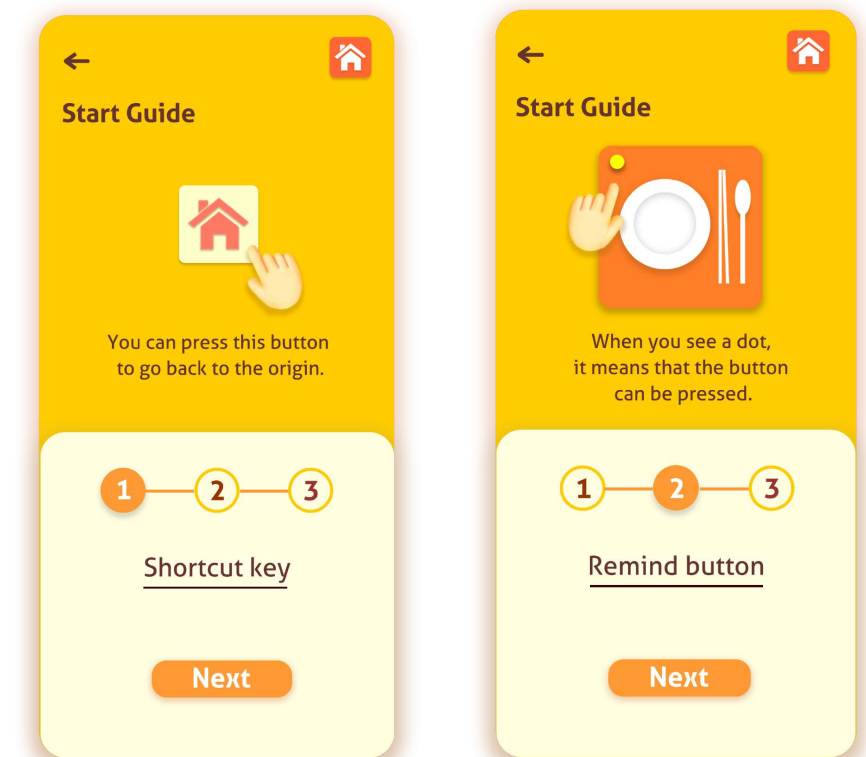


Figure 101: voice model interface

### Trouble 1: There's too much content at the same time.

Too many functions, the old brain capacity is not enough to remember everything at the same time

#### Solution :

Introduce product features gradually over time, rather than introducing them all at once.

For this part, the interaction design compensation I made is to divide the screen, not to give the elderly too much content at the same time. Use visual relationships to place important content in the center of vision. Divide the content level more clearly.

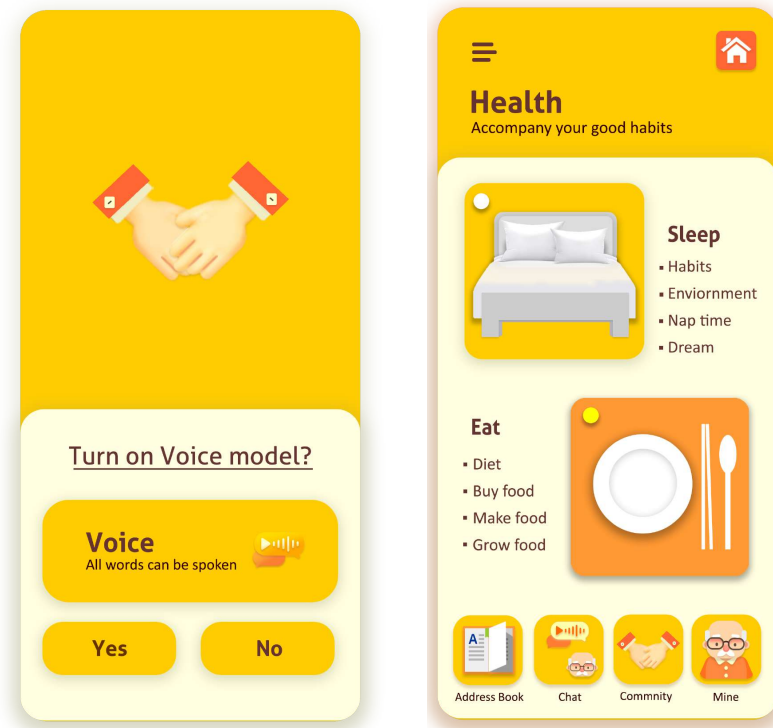


Figure 102: Interface

### Trouble 2: They often forget how to use it.

Even if they have been taught once, they forget it a few days later. But young people can't be around all the time.

#### Solution :

In the icon design, I added a reminder button. The elderly only need to pay attention to this button, remember that all the reminder button logo can be pressed. In addition, I added more text compensation.



Figure 103: Icon display

### Trouble 3: They don't know where to point button at the screen.

They often look at the screen and don't know where to point. To them, the screen is a flat surface.

#### Solution :

Neuomorphism UI design / Skeuomorphic design  
It's easier to help them find a place,



Figure 104: Skeuomorphic icon



## Navigation

After entering the main interface of the system, in the part of the main interface about service selection, the navigation is composed of four function keys: story community, address book, chat, and mine. And the home button is designed to ease the worries of the elderly. The font is guaranteed to be at least 16 pixels, making it easy for the elderly to read.

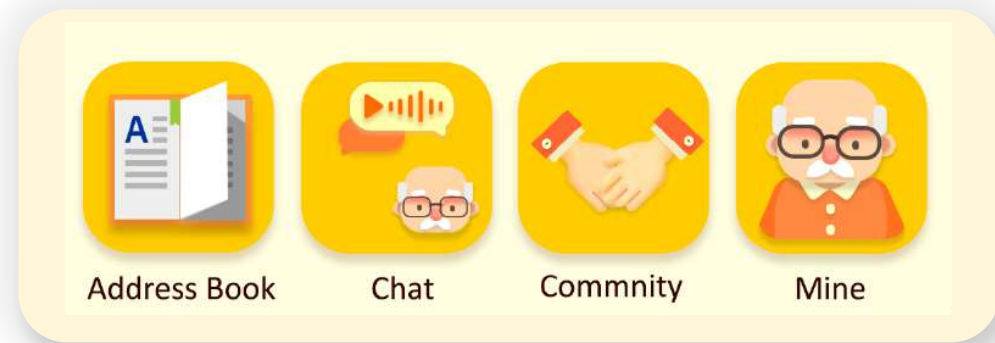


Figure 105: navigation design

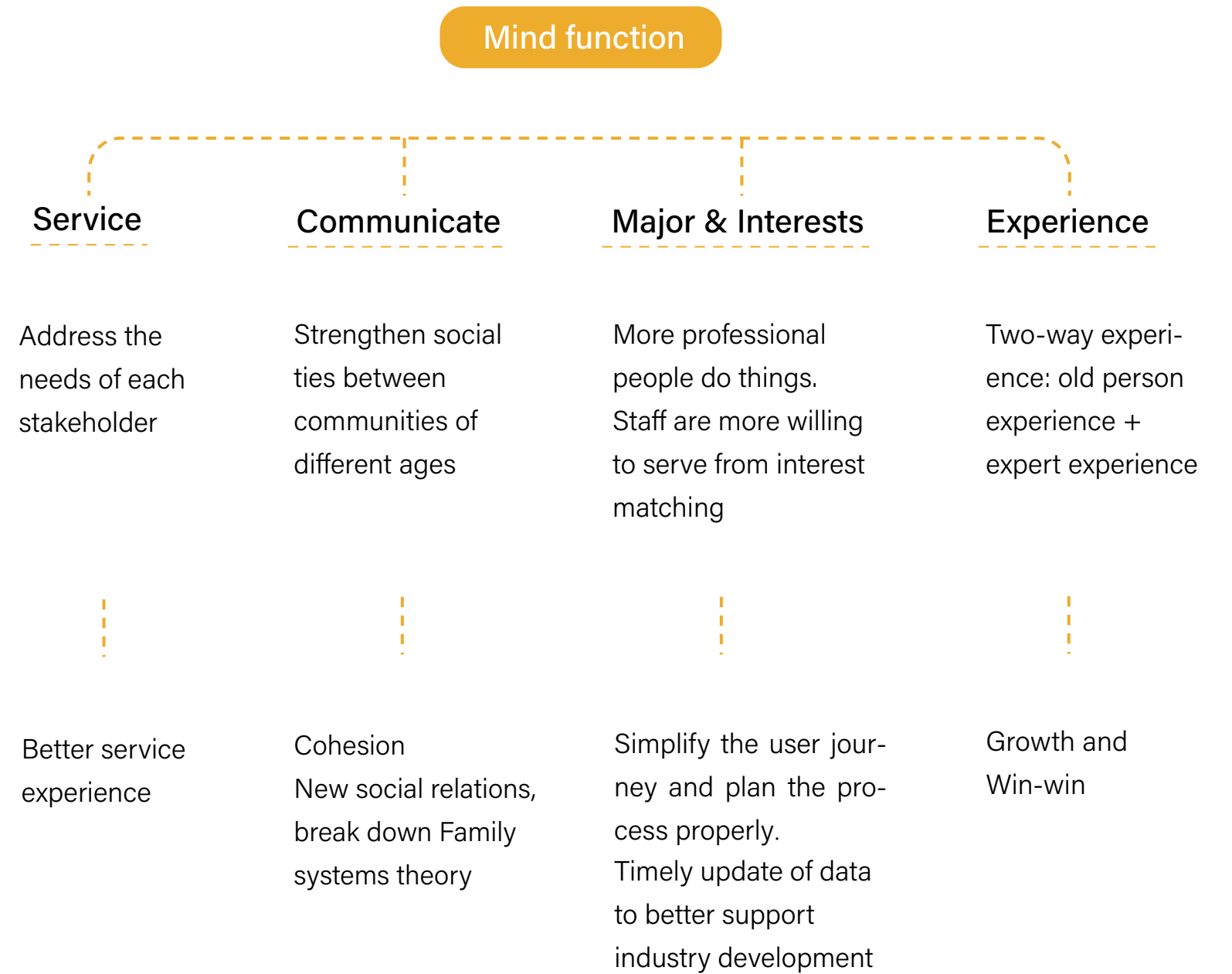
## Voice model

Designers should provide users with additional compensation in applications aimed at the elderly. There should be appropriate introductory functions to introduce users to functions they may not be familiar with.



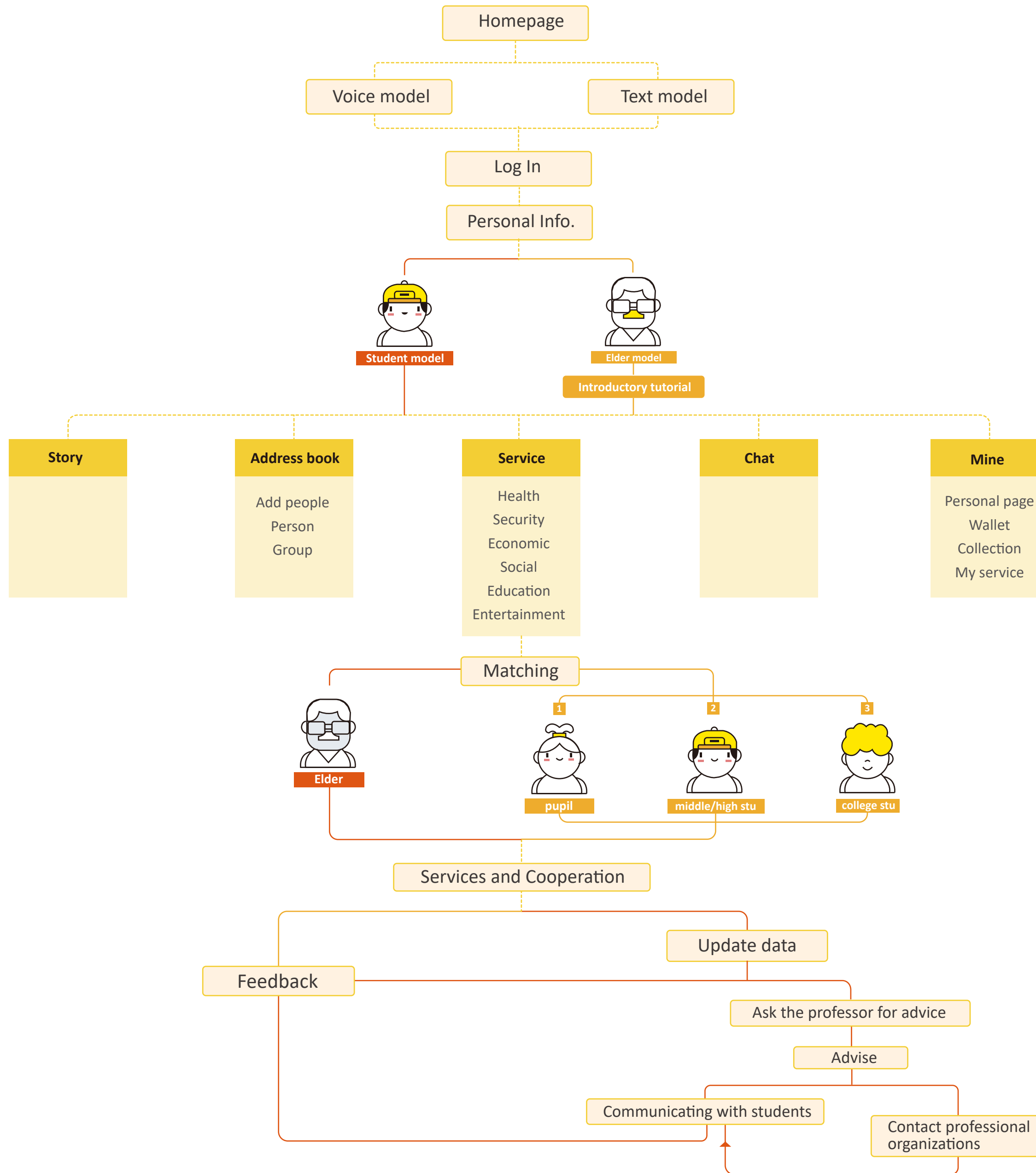
Figure 106: voice model icon

## The function

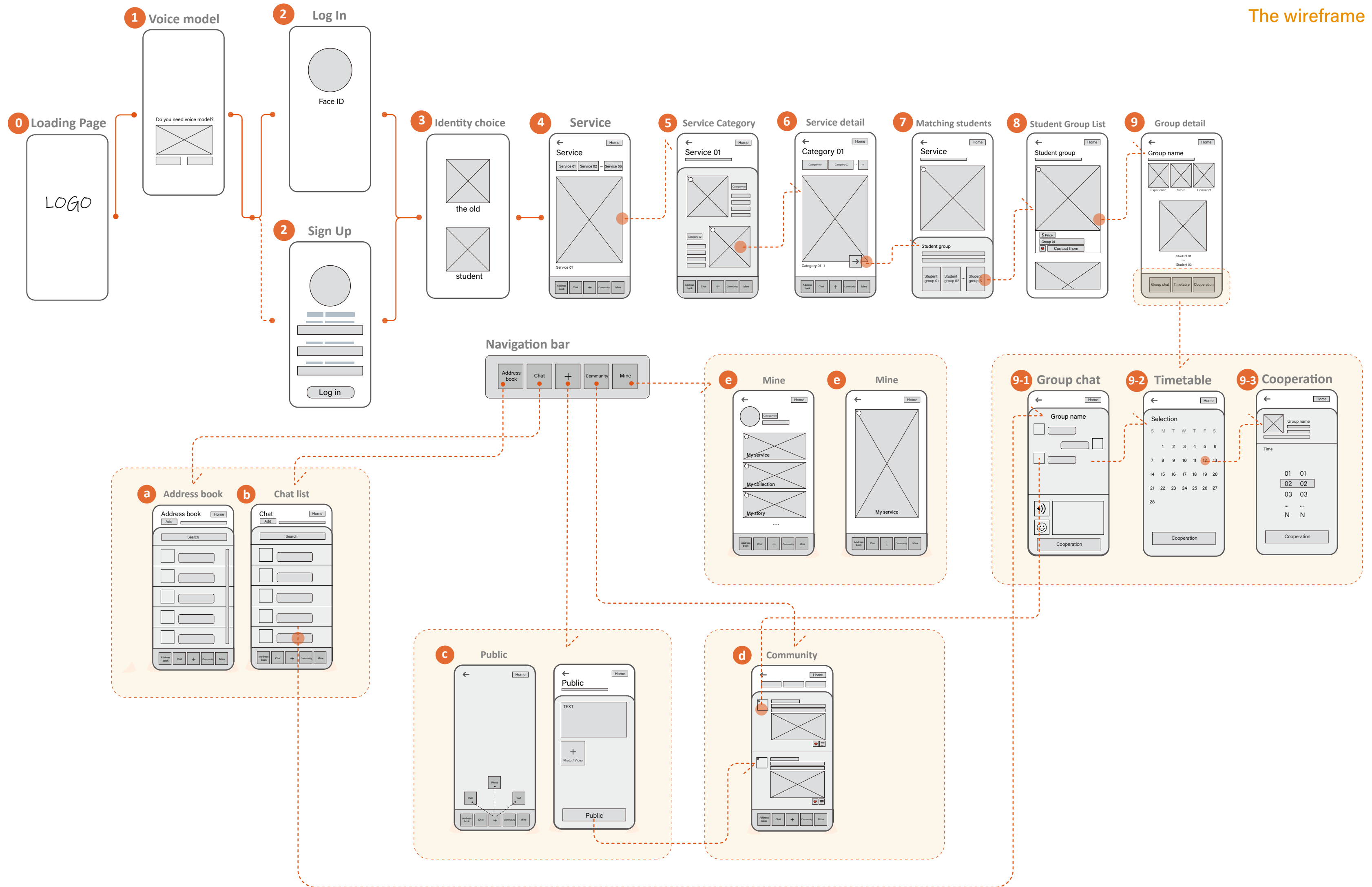


# The flow chart

The framework







## The first Test

The older testers represent the recipients of the technology. To better understand the use of technology by the elderly, the most effective way is to have direct contact and contact with the elderly through participating projects. Because the younger generation are digital natives, but the older generation is the new generation of digital users.

The current interaction specification is very mature. I will continue this specification for the design of the elderly, focusing on improving the areas that are not suitable for the physiological conditions of the elderly. Early participation in the design of the framework for the elderly is not the only challenge, it is also a challenge that motivates designers to seek cooperation with the elderly.

## Service system experience

I did a test for the service experience part. Focus on how the elderly feel about the concept of service and whether the scope of service covers their daily basic needs. I test these service scenarios to confirm whether this concept is what they need and is accepted. During the test, the elderly showed more positive attitudes. They like this service experience.



*Figure 107: Test interview*

On the other hand, I also want to hear young people's thoughts on the service experience, whether this is willing to attract them into the system. Through interviews, more young people said that the attraction of the platform lies more in the acquisition of contacts and experience, and they prefer to serve in a group rather than as individuals. Service cycle and length are also factors they consider. They also worry about communication. The immediate reward is the last thing on their mind.



*Figure 108: Test interview*



## The function

In order to allow users to participate in the design process, functional testing is an important technique that can enhance designers' own ideas or collect piles of unstructured data to provide people with how to use it. Design is mainly from the perspective of age-sensitive technology design to understand whether the elderly users are suitable or feasible in technology development. Therefore, I drew the main wireframe on the paper to test that the current framework conforms to the habits of elderly users.

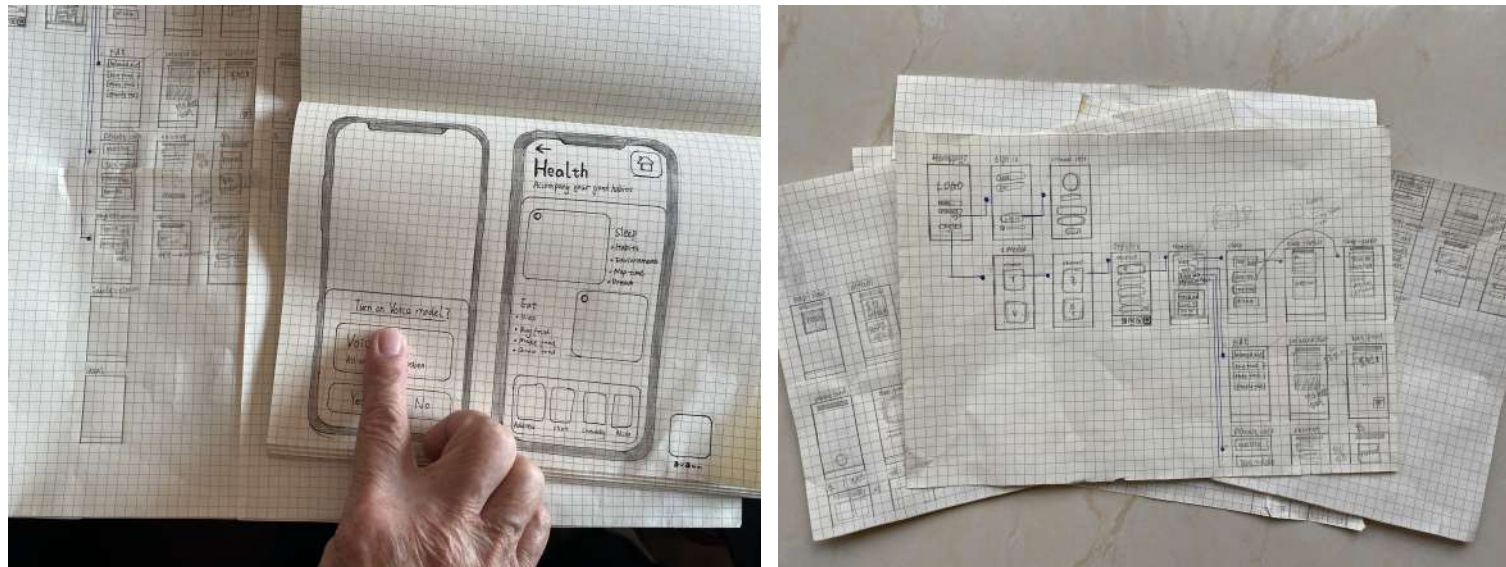


Figure 109: The function test

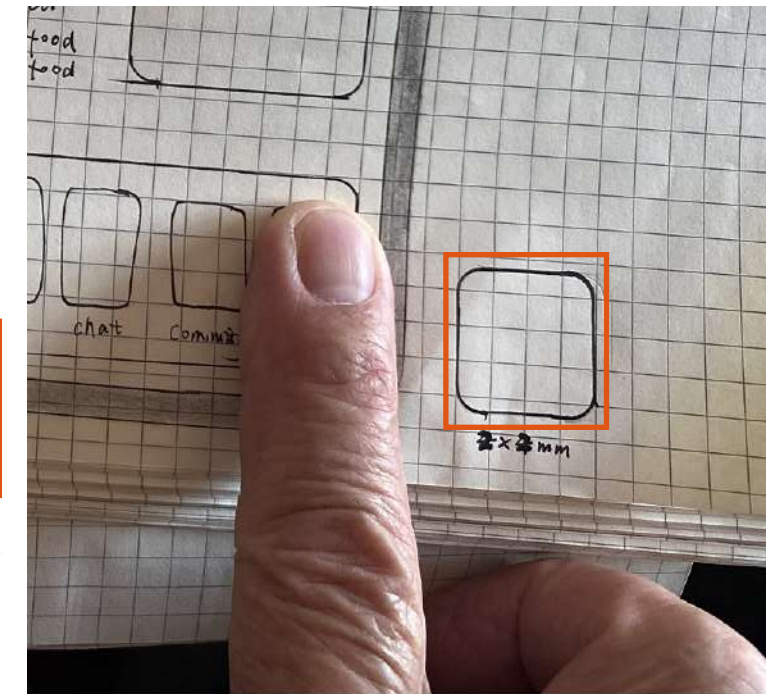


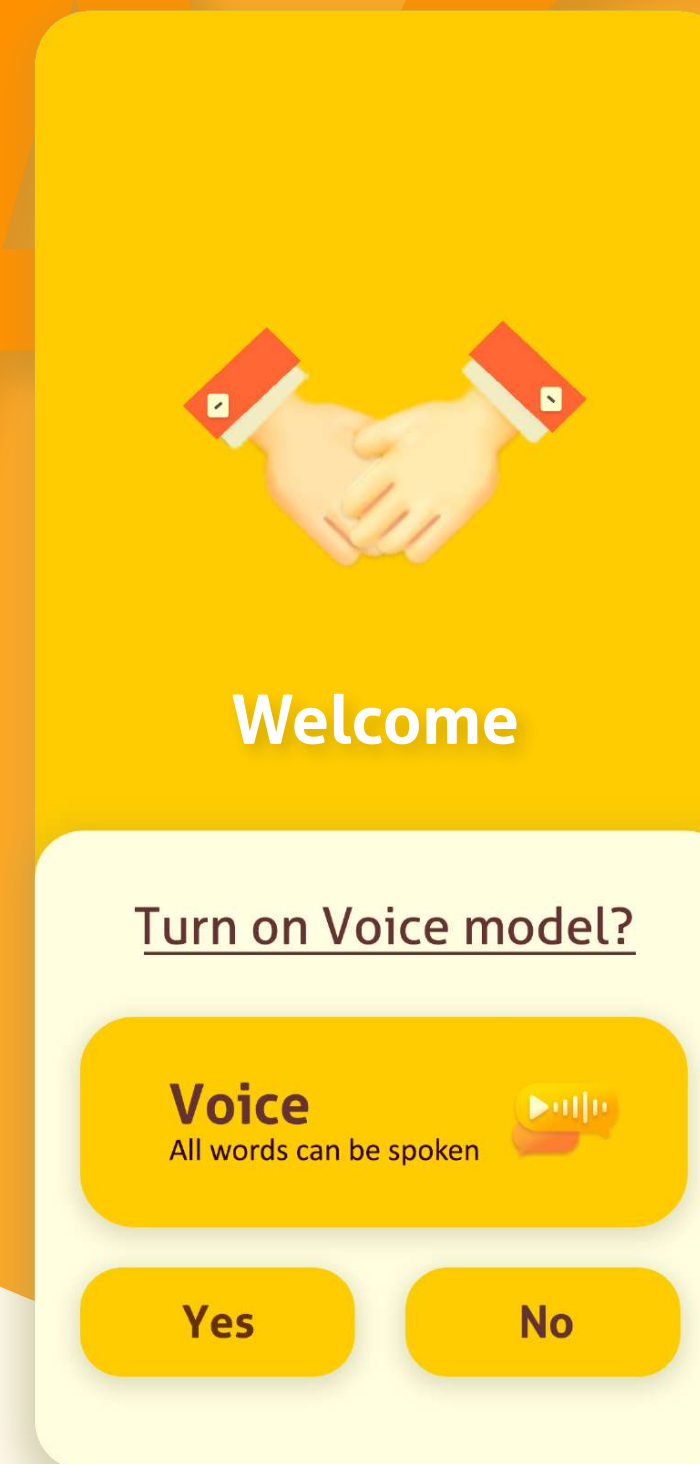
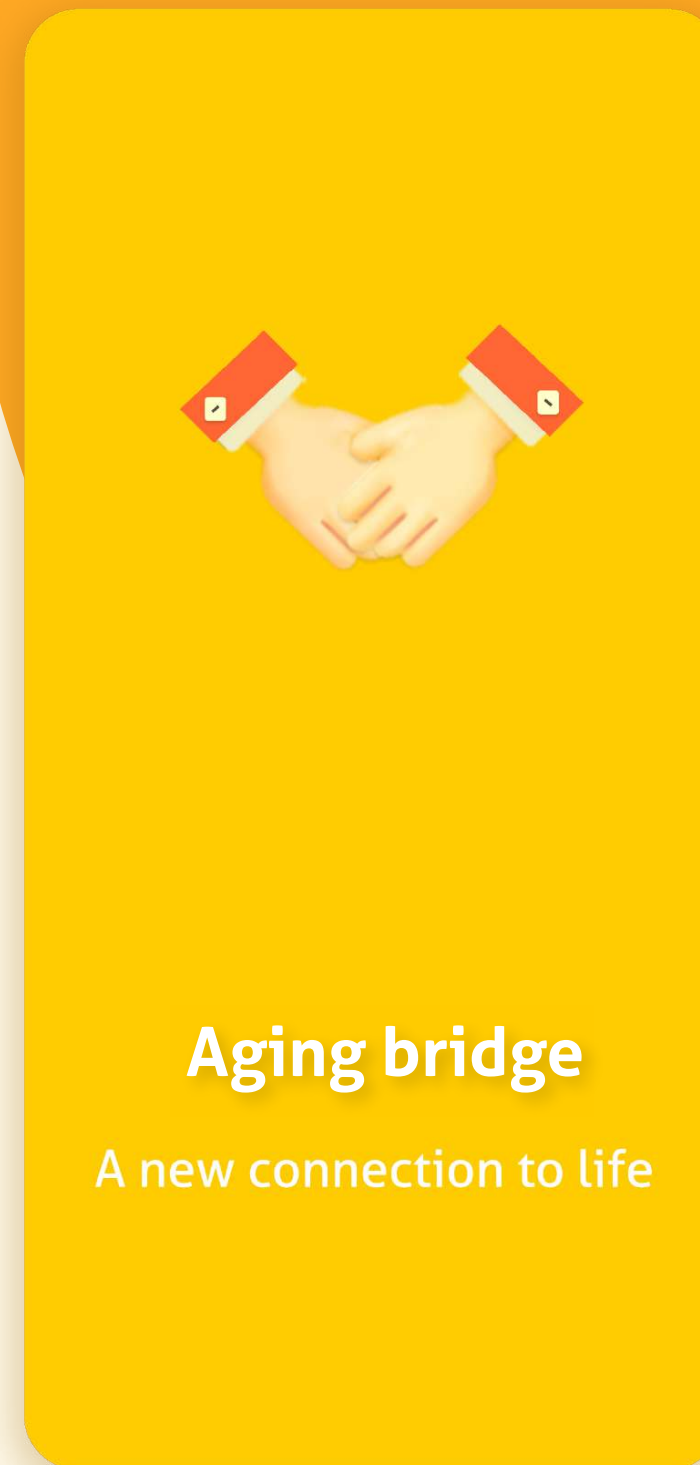
Figure 110: Compare conventional icon sizes

In the design compensation, I tried to increase the font size. In the icon design, I also increased the size. The picture above is a comparison of the icon size of this interactive design.

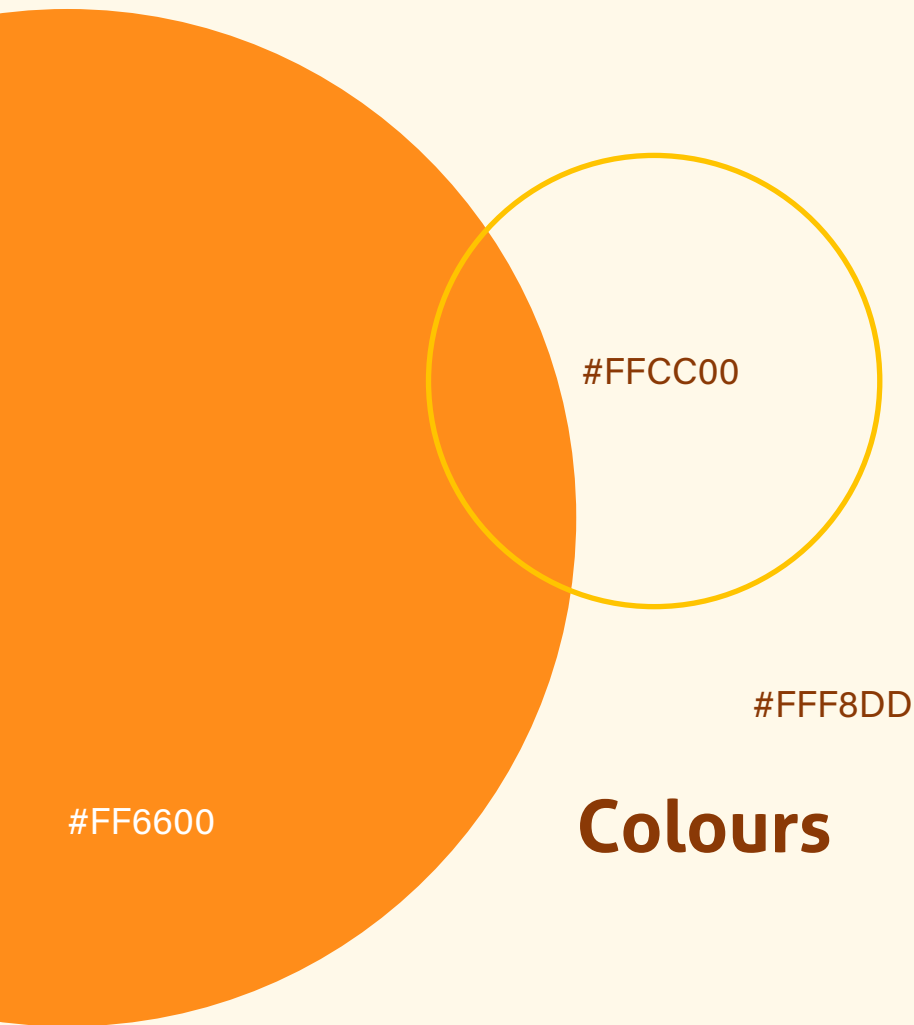
## The final prototype

### **Aging bridge** - application that build connections between the elderly and society

This is a concept of a social service system in response to an aging society.







#FFCC00

#FFF8DD

## Colours

# 01

Aller is the perfect font to make a lasting impression on any app page. Its bold presence and geometric, condensed form allow for setting in any context.

## Typography

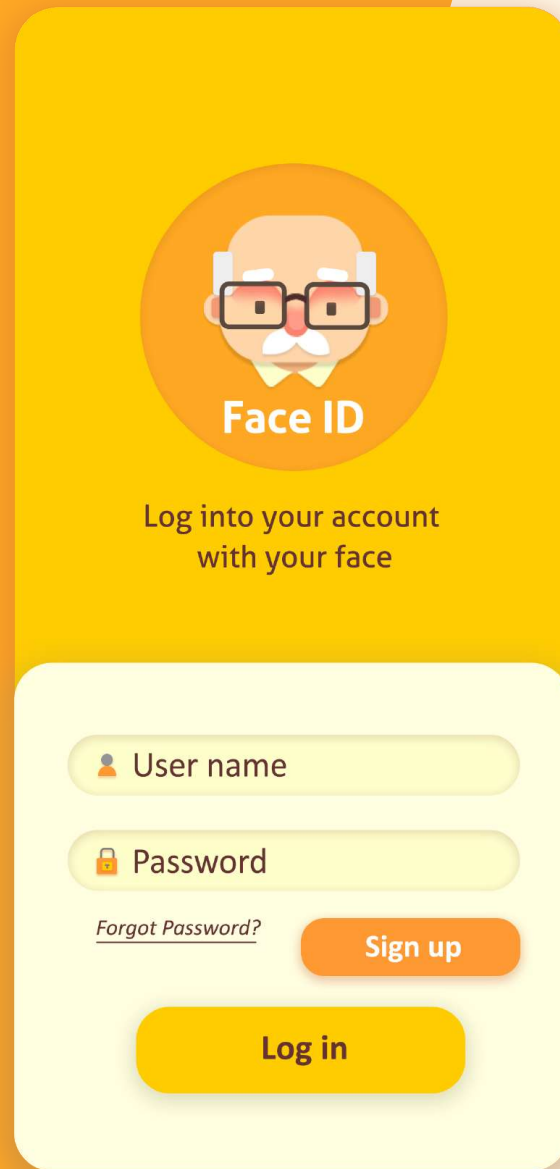
Primary typeface

**ALLER**  
**ABCDEFGHIJKLM**  
**NOQRSTUVWXYZ**  
**0123456789**

## Components



## Registration



Face ID

Log into your account with your face

User name

Password

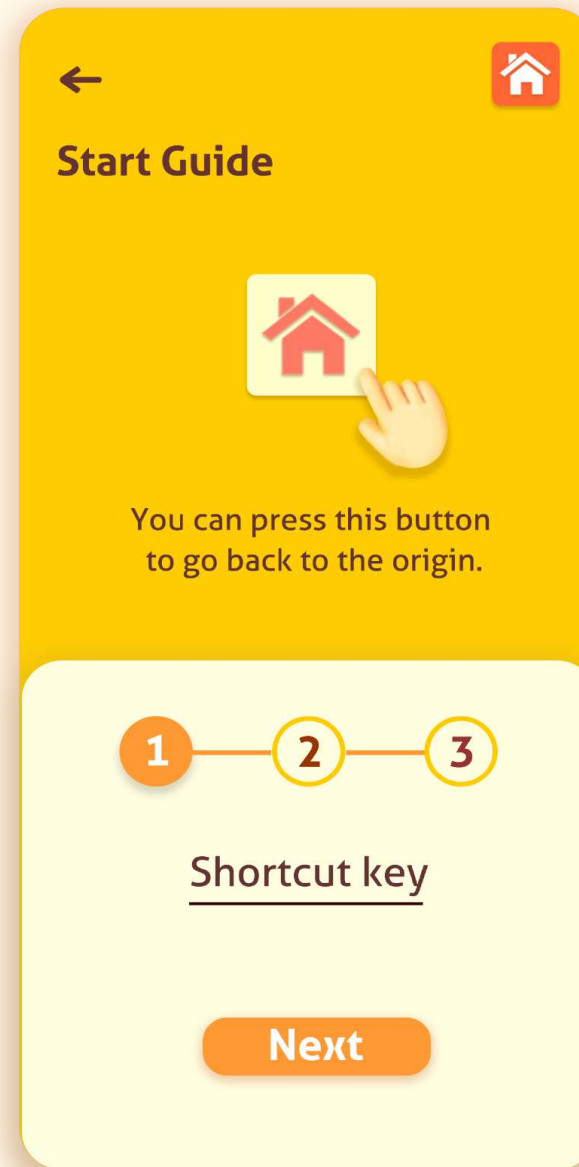
[Forgot Password?](#) [Sign up](#)

[Log in](#)

- Considering that it is very common for the elderly to forget the password, the design of Face ID is added.

- Many elderly people are newcomers to digital media. So set up an introductory tutorial.

## Introductory tutorial



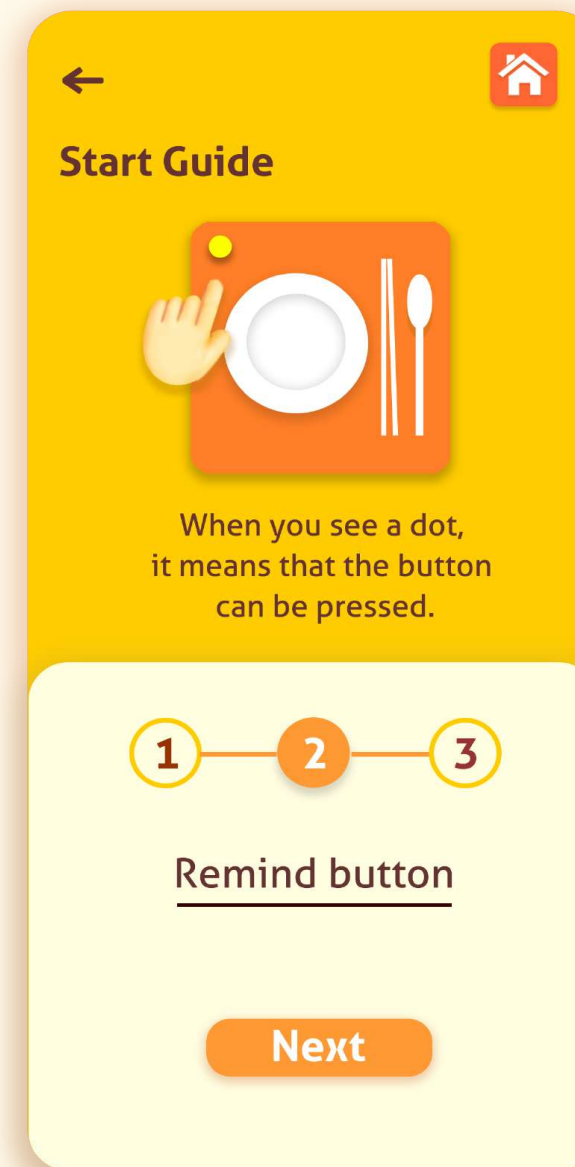
Start Guide

You can press this button to go back to the origin.

1 — 2 — 3

Shortcut key

[Next](#)



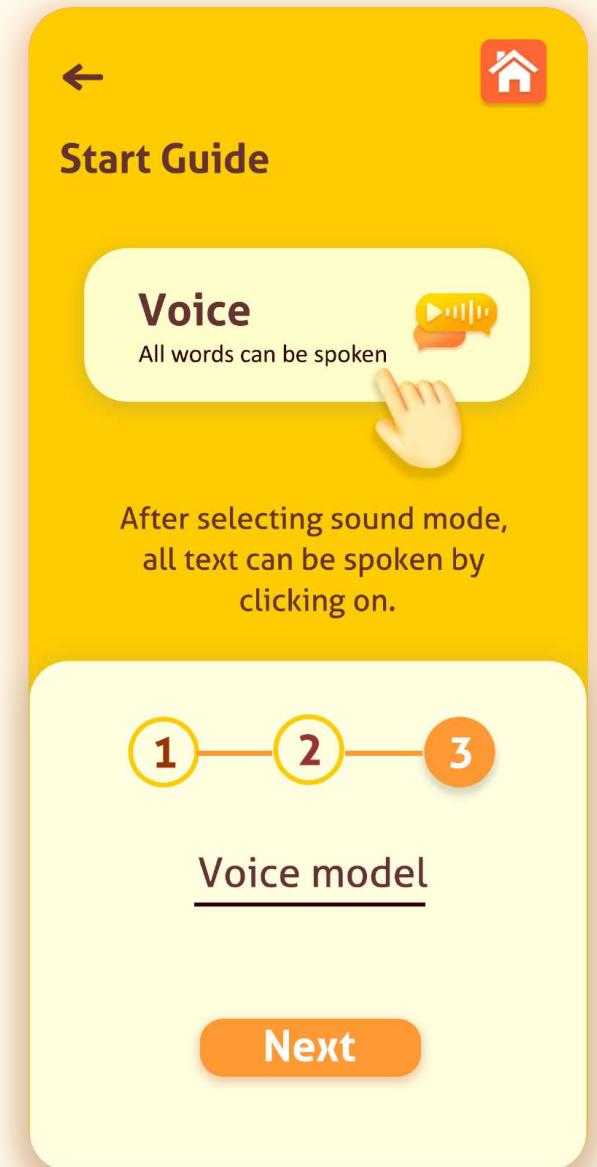
Start Guide

When you see a dot, it means that the button can be pressed.

1 — 2 — 3

Remind button

[Next](#)



Start Guide

**Voice**  
All words can be spoken

After selecting sound mode, all text can be spoken by clicking on.

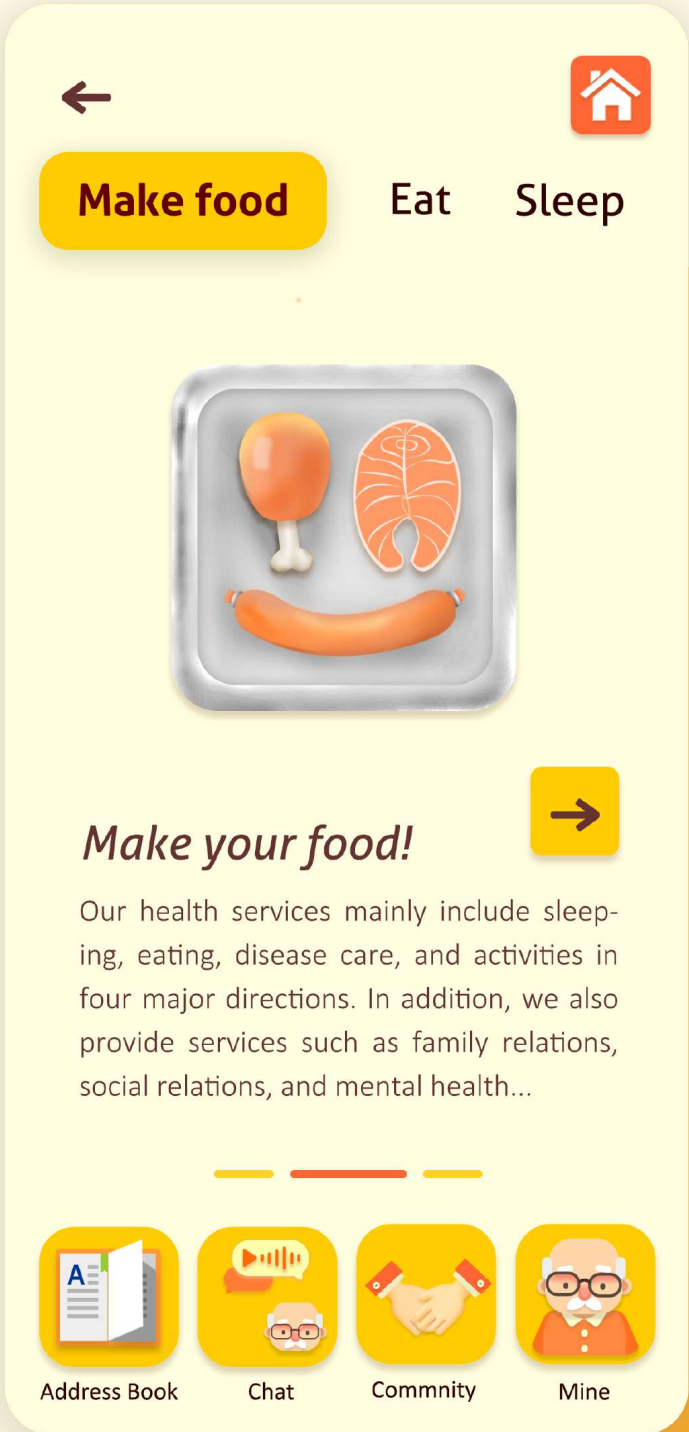
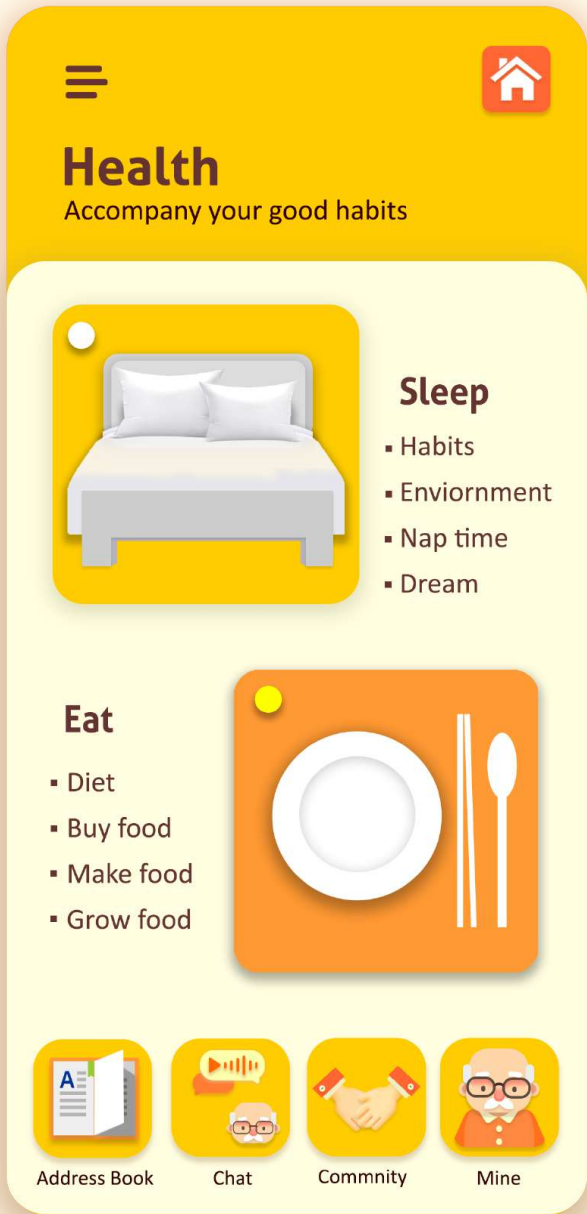
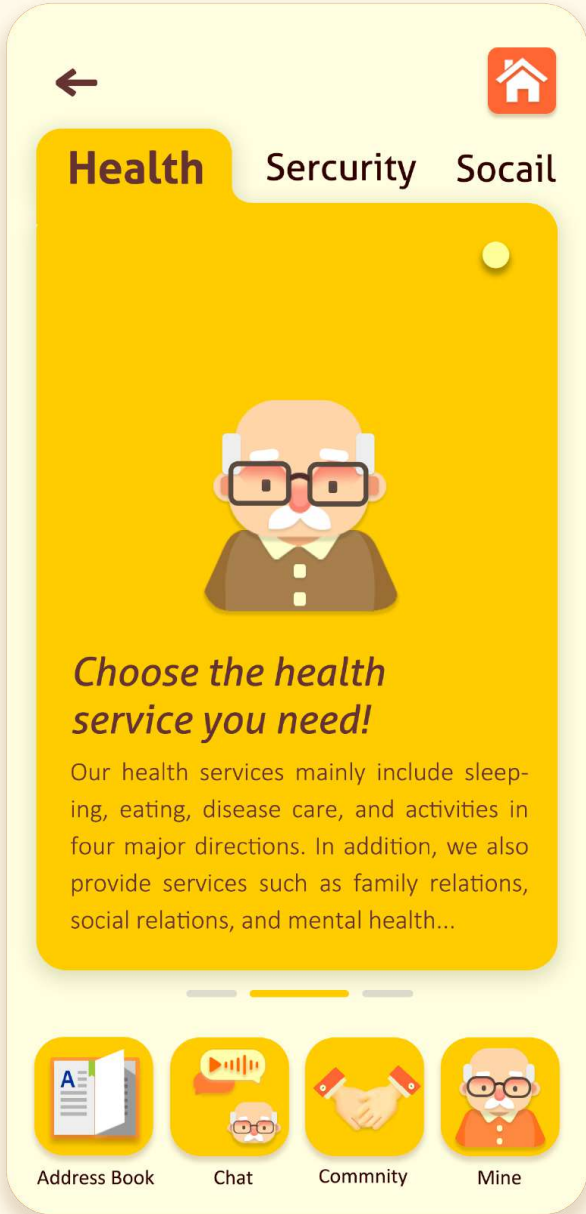
1 — 2 — 3

Voice model

[Next](#)



# Service pages



- The design of the service page is also based on skeuomorphic icons. Take the "Eat" page for example

# Group pages

← 

**Make food** Eat Sleep



**Related team**  
Find groups that need your food!




**Max or Mix**  
We are mature groups that have different experience!




**Fan culture**  
We are mature groups with food design!

- The connection between groups is key to interaction design. Here you can find the best group for you.




\$ 15/h **Digital help**

 **Contact US**




\$ 15/h **Maos mu**


 **Contact US**


← 

**Student Group**  
Find the best student group for you!





\$ 15/h **Fan culture**

 **Contact US**




\$ 15/h **Maos mu**

 **Contact US**




← 

**Fan culture**  
We are mature groups with food design!

**2month** **4.8** **89**  
Experience Score Comment



**Alice**

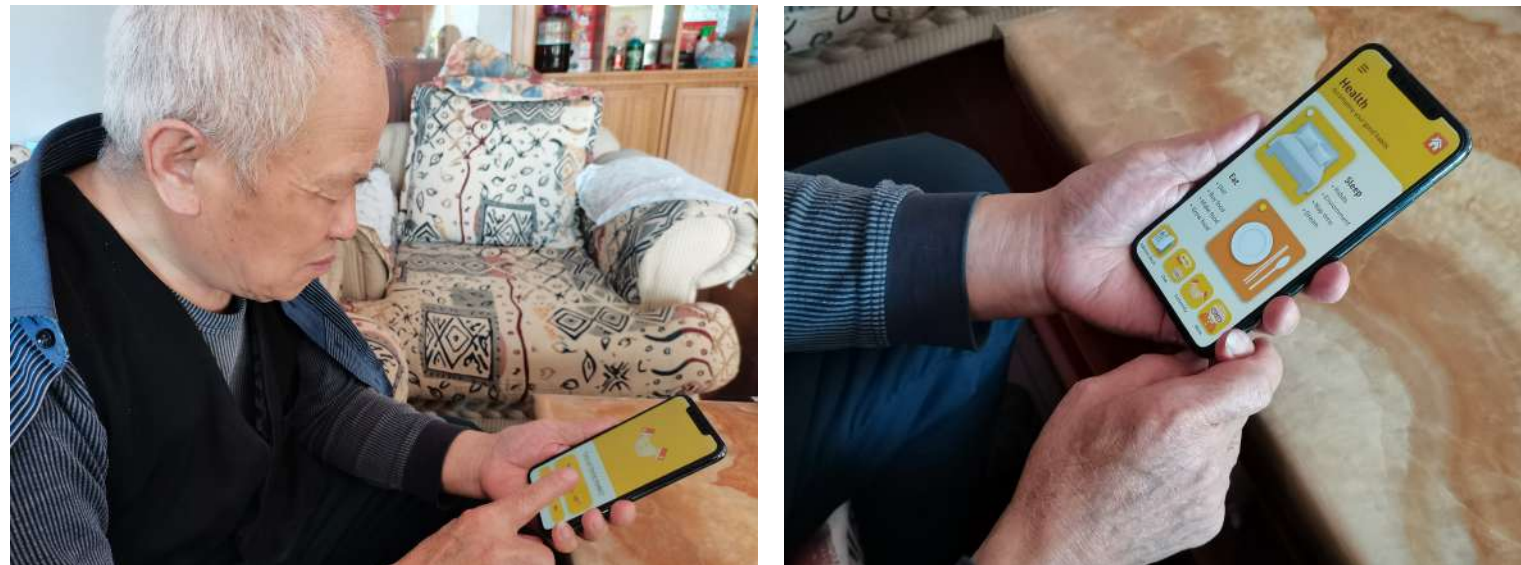
 **Chat**  **Timetable**  **Cooperation**



## Final prototype test report

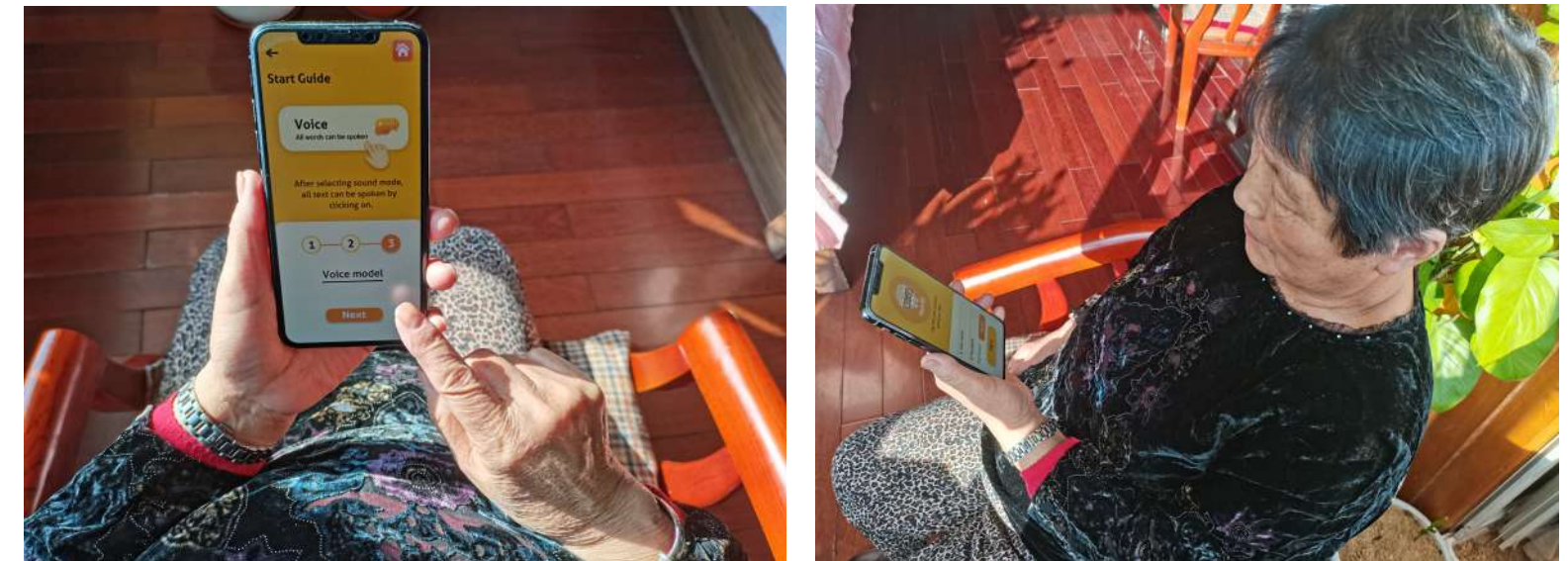
The final prototype was made with XD and placed on the iPhone for prototype testing. My test invited 78-year-old, 72-year-old and 25-year-old young people to do the final test after perfecting and completing the overall interaction design.

I first tested the prototype with a 78-year-old man. First of all, the part that the old man is most interested in serving. He will read the reminder text carefully, and sometimes hesitate to choose a dialogue. Because they are also hesitating what kind of service they need. Because he has previous experience in using media, the function and structure are comfortable for him.



*Figura 111: The final propotype test*

I then tested a 72-year-old woman. Since she did not have much experience in using digital media before, she said that an introduction is necessary for her. The quasi-materialized icon design is the most convenient design for her. Because of the distinction between color blocks, it is easier for her to know where to point.



*Figura 112: The final propotype test*

## Conclusion

Aging bridge is a service system based on an interactive design app that responds to the trend of an aging society. It establishes communication between the elderly and the society through service transformation, and connects the solution of the needs of the elderly and the realization of social value.

The design of the entire system is divided into several levels. The basic level is to solve the basic needs of the elderly, and the second level is to involve young people through services, helping the elderly or experience and contacts in related industries. . . Get corresponding immediate remuneration. The third level is when the student group faces problems that they cannot solve, they can get professional help from the professor to grow. The fourth level is to get in touch with professional institutions when the professor thinks it is necessary.

More importantly, the data generated in the whole process is divided into quality and quantity by the database, and the development of research supported by society and institutions. Another interesting point is that through this connection, the new interpersonal system that establishes close relationships with family and blood is broken.

This is also a new vision for the future. I hope that my design can make life better, and that through such an inclusive design, people can move from being scattered to being united.

This paper is just a tentative idea at the beginning, and I think this direction is feasible in several tests. But from regulation, to data, to operations, it takes a lot more effort and a lot more professional involvement and experimentation. I hope my research can provide more possibilities for the development of society.



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