



D9.8 – First socio-economic survey and stakeholder analysis report

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E-VITA – European-Japanese Virtual Coach for Smart Ageing

E-VITA (EU PROJECT NUMBER 101016453)

WP9 – Dissemination & Exploitation

D9.6 – First socio-economic survey and stakeholder analysis report

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Executive Summary

The aim of D9.8 “First socio-economic survey and stakeholders' analysis report” is to map an overall picture of EU Member States and Japan about society and culture with regard to ageing: demography, healthcare situation, legal framework, key actors, key economic facts, policies, age-friendly environment policies, etc.

The outcomes will be used to optimize international collaboration between Europe and Japan with regard to Active and healthy Ageing (AHA), related technology development and social sciences. This includes exchange programs of students, developers and scientists between the partners in Europe and Japan.

The first chapter describes the approach adopted to understand the political and socio-economic context of each country involved in the project by using an approach based on the PESTEL framework, used to analyze and monitor the macro-environmental factors that may have a profound impact on the e-VITA diffusion.

In the second chapter, we provide the results of the Socio-economic survey conducted in Europe and Japan, to get an overview of which group of older adults do not use the Internet and which already do or if there is a difference at all between these two groups. An understanding of which groups of older adults use the Internet and which do not, adopting a PESTEL approach, is relevant to the question of how e-VITA needs to be introduced to the target group in the coming months and which groups of people may need to be given special consideration in the development of the coach.

The third chapter is focused on the perspective of relevant stakeholders in each country, to get a more detailed picture of attitudes, drivers, barriers and opportunities for the e-Vita system, in order to collect useful information for the future impact of the system. The data were collected through two waves of interviews and will serve as basis for a more extensive survey, after the system's availability.

The challenges and pitfalls are described in the Conclusion chapter.

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Acronyms and Abbreviations

Table 1 Acronyms and abbreviations

ESS	European social survey
ISCED	International Standard Classification of Education
PESTEL	Political, Economic, Social, Technological, Environmental and Legal factors

1 Introduction

Within this document, an overall picture of EU Member States and Japan society and culture about Active and Healthy Ageing, related technology development and social sciences is given: demography, healthcare situation, legal framework, key actors, key economic facts, policies, age-friendly environment policies, etc. are reported in the main sections and related sub-sections.

The PESTEL framework is used to guide this overall picture across countries. PESTEL is an acronym that stands for Political, Economic, Social, Technological, Environmental and Legal factors. It is a framework or tool used to analyze and monitor the macro-environmental factors that may have a profound impact on an organization's performance. As shown in Figure 1, PESTEL is broken down into six categories referencing factors.

- Political factors refer to both local and national politics, politicians, government and related laws. Within this category taxation policies, trade traffics, labour regulations, health & safety as well as education laws can be mapped.
- Economic factors refer to the general economic environment and the effects that this might have on the business and its customers, distributors and suppliers.
- Social factors focus on the buying behavior and how consumer needs can affect the value and necessity of a product or service. The category maps how the societal and cultural aspects of a chosen market might affect business (i.e., age demographics, ethnicities, and cultural differences).
- Technological factors play a crucial factor in business analysis. In PESTEL analysis, they can refer to the development of new technologies or the infrastructure for and access to established ones.
- Environmental factors that may influence the deployment of products or policies.
- Legal factors deal with how particular laws may affect business, idea, or concepts.

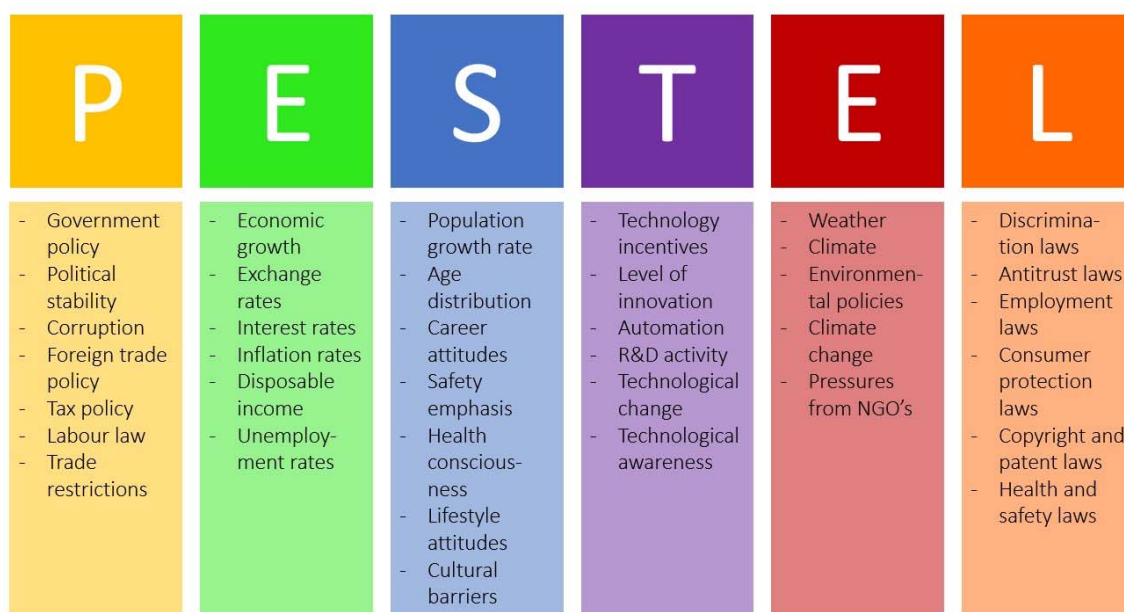


Figure 1. The PESTEL framework

Within this document, the PESTEL framework is used to guide the approach of the overall work, by supporting the identification of country-specific goals and values as well as rapid changes in the different environments that can influence the diffusion of the e-VITA system.

2 Socioeconomic Survey

2.1 Background and introduction

Due to the increasing life span and the accompanying demographic change, the group of older adults is becoming an ever-growing group of potential Internet users (Hunsaker & Hargittai, 2018). This is because it is not only in the younger age groups that the number of Internet users has increased rapidly over the past few years. While the proportion of Internet users in Germany among the over-70s was still around 29 % in 2014, 52 % of older adults were using the internet in 2020. Nevertheless, a large gap is still evident in comparison with the younger generation, as the proportion of Internet users between the ages of 14 and 49 is now almost 100% (Statista, 2021a). A similar pattern can be seen in France. There, 100% of 18 to 24 year olds use the Internet, whereas the proportion is 81% for 60 - 69 year olds and only 58% for those over 70 (Statista, 2021b). Looking at daily Internet users in Italy in the year 2019, it is also noticeable that there is a large gap between older adults aged 65 and over and younger people. While the 25-34 age group makes up the largest group of daily Internet users (85%), those over 65 have the smallest share of users (29%) (Statista, 2021c). Reasons for non-use can be manifold. Helsper and Reisdorf (2013) investigated in a British sample what the most frequently cited reasons for non-use (people who have never used the Internet) and no longer use (ex-users, people who have used the Internet in the past and no longer do so) are. The most frequently cited reason (50%) for not using the Internet was **lack of interest**. One tenth of respondents cited **lack of access and high cost and lack of skills**. In the ex-user group, lack of access and high cost were the main reasons cited for no longer using the Internet. However, results from digital divide research also show that **socioeconomic factors** such as education, income, age, gender or migration background play an important role. The use of the Internet is steadily expanding among older people in Japan. According to the Ministry of Internal Affairs and Communications' Survey of Telecommunications Usage Trends (2018), 75.7% of people in their 60s, 53.6% of people in their 70s, and 23.4% of people aged 80 and older use the Internet, and the usage rates for all of these age groups increased in 2016 compared to 2010. In this environment of widespread Internet use, the ability to understand the Internet correctly and make information choices on one's own will be useful in terms of maintaining health.

The goal of this analysis is to get an overview of which group of older adults do not use the Internet and which already do or if there is a difference at all between these two groups. An understanding of which groups of older adults use the Internet and which do not is relevant to the question of how e-VITA needs to be introduced to the target group in the coming months and which groups of people may need to be given special consideration in the development of the coach.

To investigate whether there is a difference between older adults who use the Internet and those who do not, data sets from the European Social Survey (ESS) for Italy, France and Germany were used, as well as data from the 9th International Comparative Survey on the Lives and Attitudes of the Elderly for Japan. The two groups were then examined separately for each country in terms of socioeconomic factors as well as health and psychological factors.

2.2 Europe

2.2.1 Methodology

interviews, which last approximately one hour, take place in the local language and follow strict Data from France, Italy and Germany from the ESS version ESS9-2018 (ed. 3.1.) were used for the analysis. The ESS is a survey conducted regularly in over 35 countries to date (30 in the ninth round used here). Its objectives are to observe and interpret public attitudes and values in Europe, to further develop methods to better measure cross-national surveys, and to develop European social and attitudinal indicators.

The survey involves a random sample, with a target response rate of at least 70 %. The face-to-face translation protocols. The survey period for the data used here spanned between 2018 and 2019 (France 10/19/18-01/04/19, Italy 12/17/18-10/03/19, Germany 08/29/18-04/03/19) (European Social Survey, 2021).

2.2.2 Analysis variables and operationalization

All persons aged 65 and older were included in the analysis. The analysis focuses on the characteristics of older people who use the Internet (onliner) and people who do not use the Internet (offliner). For this purpose, Internet usage was determined based on the following question *"People can use the internet on different devices such as computers, tablets and smartphones. How often do you use the internet on these or any other devices, whether for work or personal use?"* and answer options from 1 (Never) to 5 (Every day). This was dichotomized in the present analysis and people with a value of 2-5 were defined as "onliner", while people with a value of 1 (Never) were defined as "offliner". In addition to the usage variable described, the duration of use in minutes was also considered. This is surveyed in the ESS with the question *"On a typical day, about how much time do you spend using the internet on a computer, tablet, smartphone or other device, whether for work or personal use?"*.

Differences between onliners and offliners over 65 years of age with respect to various socioeconomic and health-related outcomes were considered. Socioeconomic variables represent age, number of children (n), number of grandchildren (n), gender (female/male), education level (low/middle/high), and migration background (yes/no). Table 2 shows how the variables mentioned are composed and how they were included in the analysis.

Table 2. Operationalization of the socioeconomic variables

Variable	Collection in ESS	Inclusion in the analysis
Age	Calculated from the indication of the date of birth	As defined in the ESS
Number of children	Collected from the information provided in the question about the <i>"Number of Children ever given birth to/fathered"</i> .	As defined in the ESS
Number of Grandchildren	Collected from the information given when asked about the number of grandchildren.	As defined in the ESS
Gender	Collected from the question about whether person is male or female	As defined in the ESS
Relationship Status	Collected from the question <i>"You just told me that you live with your"</i>	Coded in one variable: Married/Partnership (includes

	<p><i>husband / wife / partner. Which one of the descriptions on this card describes your relationship to them?"</i> (Legally married, In a legally registered civil union, Living with my partner – not legally recognised, Living with my partner – legally recognized, Legally separated, Legally divorced/Civil union dissolved) and the question <i>"This question is about your legal marital status not about who you may or may not be living with. Which one of the descriptions on this card describes your legal marital status now?"</i> (Legally married, In a legally registered civil union, legally separated, Legally divorced/Civil union dissolved, Widowed/Civil partner died, None of these (NEVER married or in a legally registered civil union)</p>	<p>registered civil unions), Divorced/Seperated (includes dissolved registered civil unions), Widowed, Single (never married or in a legally registered civil union)</p>
Level of Education	<p>Classification of educational attainment using the ES-ISCED, generated variable in the ESS.</p>	<p>Reduction to 3 categories: Low = ES-ISCED I and II Medium = ES-ISCED IIIb, IIIa and IV High = ES-ISCED V1 and V2</p>
Migration background	<p>Not directly collected in the ESS</p>	<p>Calculated from whether respondent whose mother or father were born in the country of destination. A migration background was assumed if the respondent, his/her mother or father were not born in the country of destination (Destatis, n.d.).</p>

The educational level is composed of the International Standard Classification of Education (ISCED), which was developed by UNESCO in the early 1970s to provide a uniform framework for the collection and presentation of education statistics (BMBF, n.d.). The ES-ISCED (European Survey – ISCED) is an adapted European survey version of ISCED¹.

In addition to socioeconomic characteristics, health and psychological aspects are also taken into account. These include Happiness, Subjective Health, Trust in Others and Participation in Social Activities compared to others in the same age. Table 3 shows the composition of the variables mentioned and how they were included in the analysis.

Table 3. Operationalization of the health-related and psychological variables

¹More detailed information on how ISCED or ES-ISCED is composed can be found at https://www.europeansocialsurvey.org/docs/round9/survey/ESS9_annex_a1_e03_0.pdf

Variable	Collection in ESS	Inclusion in other variables
Happiness	Collected from the question <i>“taking all things together, how happy would you say you are?”</i> (0 extremely unhappy to 10 extremely happy)	As defined in the ESS
Satisfaction with life	Collected from <i>“All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied.”</i>	As defined in the ESS
Most People can be trusted	Collected from the question <i>“generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted.”</i> (0 You can't be too careful to 10 Most people can be trusted)	As defined in the ESS
Satisfaction with Health	Collected from the question <i>“how is your health in general? Would you say it is ...”</i> (1 Very Good to 5 Very Bad)	Dichotomized, Rather good = 1-3 Rather bad = 4-5
Take part in social activities compared to others of same age	Compared to other people of your age, how often would you say you take part in social activities? (1 Much less than most to 5 Much more than most)	Dichotomized, Less = 1-2 Same or more = 3-5

Since a median split according to Lasarov and Hoffmann (2017) can significantly affect the results, the cut-off value for dichotomizing the variables (Satisfaction with health, take part in social activities) was set based on the scale. In addition to the variables mentioned above, religiousness was also considered. This is surveyed in the ESS with the question *“Regardless of whether you belong to a particular religion, how religious would you say you are?”* and response options ranging from 0 “Not at all religious” to 10 “Very religious”.

Descriptive analysis

First, all persons were excluded from the data set who were younger than 65 years at the time of the survey and did not live in Germany, Italy or France. This was followed by a frequency analysis of the sociodemographic variables and the health-related and psychological aspects. This process was country-specific for the entire sample and took into account usage behavior (onliners vs. offliners). For metric variables, the mean value as well as the standard deviation was determined. The distribution

provides an initial impression of the extent to which onliners and offliners differ in terms of socioeconomic, health-related and psychological aspects. In addition, a chi-square test was calculated between usage behavior and all other categorical variables, as well as the effect size *Cramer's V*. For nominal and metrically scaled variables, the Mann-Whitney U test was applied due to the lack of normal distribution. In addition, the effect size *r* is determined, which is also composed of the z-score and the root of N ($r = \frac{z}{\sqrt{N}}$). Values > .3 can be considered a medium effect size, values > .5 a large effect size (Field, 2013). Significance level for all analyses was set at $p \leq 0.05$.

For all analyses, data were weighted and corrected for population size. The weighting factor (Analysis Weights) is already provided in the ESS.²

2.2.3 Results

A total of 1.737 individuals could be included in the analysis for Germany, 1.336 for France, and 1.406 for Italy. First, it was examined how online and offline users are basically distributed within the countries. The results of the analysis are shown in Figure 3. It shows that more than half of the 65-year-olds in France (59.90 %) and Germany (56.69 %) already use the Internet. In contrast, a different picture emerges from the Italian data. There, only 39.14% of the over-65s can be described as onliner, which means that more than half do not use the Internet. Except for Italy (n = 3), there were no missing values with regard to this analysis.

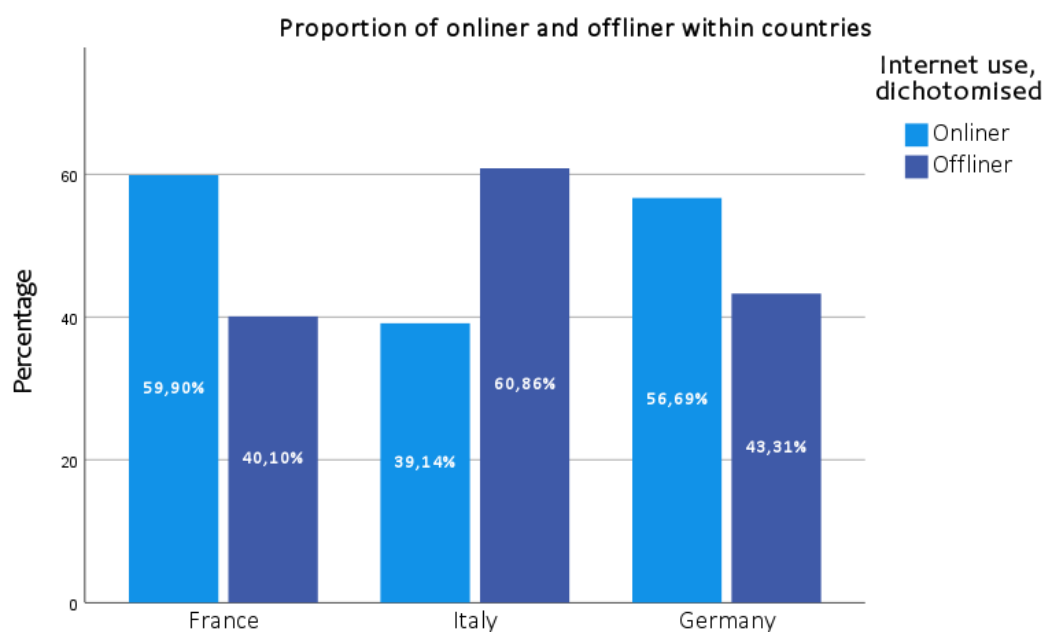


Figure 2. Proportion of onliner and offliner within countries

In terms of Internet usage in minutes, however, Italy leads with an average of 108.98 (± 93.11) minutes, followed by Germany with an average of 102.89 (± 83.72) minutes and France with an average of 8.43 (± 91.84) minutes. However, the number of valid values is limited at this point. For analysis of Internet use in minutes, 287 valid cases could be included for Italy, 549 for France and 664 for Germany.

Italy

² For detailed information see

https://www.europeansocialsurvey.org/docs/round9/survey/ESS9_data_documentation_report_e03_1.pdf

Overall, the average age of the persons included in Italy is 74.89 (± 7.00) years. The average number of children is about 2 ($\bar{X} = 2.12$; ± 1.03) and the average number of grandchildren is above 2 ($\bar{X} = 2.48$; ± 2.49). Onliners are on average 71.19 (± 5.33) years old, have on average just under 2 children ($\bar{X} = 1.95$; ± 0.86) and around 2 grandchildren ($\bar{X} = 1.89$; ± 2.24). In contrast, offliners are significantly ($p < .001$) older on average at 77.27 (± 6.91) years, have significantly ($p < .001$) more children ($\bar{X} = 2.21$; ± 1.11) and on average with under 3 grandchildren ($\bar{X} = 2.84$; ± 2.56), significantly ($p < .001$) less than onliner. There were no missing values with respect to the age variable. However, there were missing values for the number of children ($n = 190$) and grandchildren ($n = 245$).

Table 4 shows the sociodemographic characteristics broken down by Internet use and for the Italian sample as a whole. It shows that aspects of low social status, such as female gender, low educational status and the presence of a migration background, are found significantly more often among offliners than onliners ($p < .001$). They are also less likely to be married or in a partnership, more likely to be divorced and more likely to be single ($p < .001$).

Table 4. Socioeconomic Characteristics by Internet Use and Total, Italy (Column %)

		Internet use, dichotomised		
		Onliner	Offliner	Total
a		%	%	%
Gender*	Male	50,56	38,31	43,11
	Female	49,44	61,69	56,89
	Missing values ($n = 0$)			
Relationship Status*	Married/Partnership	70,72	58,57	63,32
	Divorced/Sperated	9,97	1,59	4,86
	Widowed	12,42	35,43	26,45
	Single	6,88	4,41	5,37
	Missing values ($n = 15$)			
Level of education, categorised*	Low	47,87	87,13	71,84
	Mid	34,74	11,76	20,71
	High	17,38	1,11	7,45
	Missing values ($n = 6$)			
Migration background	Yes	3,11	2,41	2,68
	No	96,89	97,59	97,32
	Missing values ($n = 2$)			

a. cntry_id = IT

*Pearson Chi-Square ($p < .001$)

The largest effect sizes in the chi-square test are found in the medium range for the difference between Internet use and educational status (*Cramer's V* = .446) and relationship status (*Cramer's V* = .302) as well as in the small range for social activities (*Cramer's V* = .266). An overview of all calculated effect sizes is shown in Table 11 in the Annex. Table 5 shows health and psychological aspects according to online and offline users, as well as for the Italian total sample. Significant differences ($p < .001$) between online and offline users are found in terms of happiness, life satisfaction, trust in other people, subjective health and participation in social activities. Effect sizes range from small to medium, with age

showing the largest effect size at $r = 0.430$ and life satisfaction at $r = 0.198$. The exact results of the Mann-Whitney U Test are shown in Table 13 to 14 (see Annex).

Table 5. Health-related and psychological characteristics by internet use and total, Italy (Column %, Mean and SD)

a	Internet use, dichotomised								
	Onliner			Offliner			Total		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
How happy are you	7,02	1,83		6,18	2,09		6,51	2,03	
<i>Missing values (n = 1)</i>									
How satisfied with life as a whole	7,17	1,71		6,26	2,27		6,62	2,12	
<i>Missing values (n = 5)</i>									
Most people can be trusted	5,11	2,31		4,05	2,44		4,46	2,44	
<i>Missing values (n = 3)</i>									
Satisfaction with health*	Rather good		91,38			78,46			83,53
	Rather bad		8,62			21,54			16,47
	<i>Missing values (n = 4)</i>								
Take part in social activities*	Less		19,14			45,00			34,72
	Same or more		80,86			55,00			65,28
	<i>Missing values (n = 26)</i>								

a. cntry_id = IT

*Pearson Chi-Square ($p < .001$)

With regard to religiousness, an average value of 5.66 ($\pm 1,79$) was calculated for online users. Offliners showed a mean value of 7,10 ($\pm 2,38$). The difference between the two groups is significant in the Mann-Whitney U Test in terms of religiousness ($p = <.001$). The Italian overall sample shows a religiousness of 6,54 ($\pm 2,60$), with 5 missing values.

France

Overall, the average age of the persons included in France is 74.46 (± 6.98) years. The average number of children is about 2 ($\bar{X} = 2.37$; ± 1.16) and the average number of grandchildren is more than 3 ($\bar{X} = 3.62$; ± 2.85). Onliner are on average 72.72 (± 6.16) years old, have on average 2 children ($\bar{X} = 2.19$; ± 0.90) and slightly more than 3 grandchildren ($\bar{X} = 3.22$; ± 2.40). In contrast, offliner are older on average at 77.05 (± 7.34) years, have more children ($\bar{X} = 2.65$; ± 1.45) and on average 4 grandchildren ($\bar{X} = 4,27$; ± 3.36). There were no missing values with respect to the age variable. However, there were missing values for the number of children ($n = 129$) and grandchildren ($n = 147$).

Table 6 shows the sociodemographic characteristics broken down by Internet use and for the French sample as a whole. It shows that aspects of low social status, such as female gender, low educational status, are found significantly more often among offliners than onliners ($p < .001$). They are also less likely to be married or in a partnership, more likely to be divorced and more likely to be single ($p < .001$).

Table 6. Socioeconomic Characteristics by Internet Use and Total, France (Column %)

		Internet use, dichotomised		
		Onliner	Offliner	Total
a		%	%	%
Gender*	Male	50,90	35,82	44,85
	Female	49,10	64,18	55,15
	<i>Missing values (n = 0)</i>			
Relationship Status*	Married/Partnership	71,21	45,69	60,96
	Divorced/Sperated	13,04	10,26	11,92
	Widowed	11,31	37,49	21,82
	Single	4,44	6,56	5,30
	<i>Missing values (n = 5)</i>			
Level od education, categorised*	Low	36,50	74,21	51,56
	Mid	46,93	23,90	37,73
	High	16,57	1,88	10,71
	<i>Missing values (n = 4)</i>			
Migration background	Yes	21,56	20,04	20,95
	No	78,44	79,96	79,05
	<i>Missing values (n = 12)</i>			
a. cntry_id = FR				
*Pearson Chi-Square ($p < .001$)				

The largest effect sizes in the chi-square test are found in the medium range for the difference between Internet use and educational status (*Cramer's V* = .386) and relationship status (*Cramer's V* = .324) as well as in the small range for social activities (*Cramer's V* = .171). An overview of all calculated effect sizes is shown in Table 11 in the Annex. Table 7 shows health and psychological aspects according to online and offline users, as well as for the French total sample. Significant differences ($p < .001$) between online and offline users are found in terms of happiness, life satisfaction, trust in other people, subjective health and participation in social activities. Effect sizes range from small to medium (see Annex, Table 11), with age showing the largest effect size at $r = 0.286$ and life satisfaction at $r = 0.122$. The exact results of the Mann-Whitney U Test are shown in Table 15 to 16.

Table 7. Health-related and psychological characteristics by internet use and total, France (Column %, Mean and SD)

a	Internet use, dichotomised								
	Onliner			Offliner			Total		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
How happy are you	7,33	1,56		6,92	1,97		7,17	1,75	
<i>Missing value (n = 7)</i>									
How satisfied with life as a whole	6,65	2,04		6,02	2,50		6,40	2,25	
<i>Missing value (n = 4)</i>									
Most people can be trusted	4,68	1,93		4,00	2,48		4,41	2,19	
<i>Missing value (n = 1)</i>									

Satisfaction with health*	Rather good	91,21	81,54	87,32
	Rather bad	8,79	18,46	12,68
	Missing value (n = 4)			
Take part in social activities*	Less	17,27	31,97	23,16
	Same or more	82,73	68,03	76,84
	Missing value (n = 23)			

a. cntry_id = FR

With regard to religiousness, an average value of 5.02 (\pm 3,34) was calculated for online users. Offliners showed a mean value of 6,11 (\pm 3,24). The difference between the two groups is significant in the Mann-Whitney U Test in terms of religiousness (p = <.001). The French overall sample shows a religiousness of 5,45 (\pm 3,34), with 27 missing values.

Germany

Overall, the average age of the persons included in Germany was 73.91 (\pm 6.66) years. The average number of children is about 2 (\bar{X} = 2.13; \pm 1.00) and the average number of grandchildren is just under 3 (\bar{X} = 2.77; \pm 2.52). Onliners are on average 71.82 (\pm 5.36) years old, have on average just under 2 children (\bar{X} = 1.99; \pm 0.88) and more than 2 grandchildren (\bar{X} = 2.63; \pm 2.31). In contrast, offliner are slightly, but significant (p < .001) older on average at 76.65 (\pm 7.18) years, have significant (p > .001) more children (\bar{X} = 2.63; \pm 1.11) and on average just under 3 grandchildren (\bar{X} = 2.94; \pm 2.76). With regard to the number of grandchildren, no significant difference was found between onliners and offliners in the Mann-Whitney U Test (p = .241). There were no missing values with respect to the age variable. However, there were missing values for the number of children (n = 252) and grandchildren (n = 275).

Table 8 shows the sociodemographic characteristics broken down by Internet use and for the German sample as a whole. It shows that aspects of low social status, such as female gender, low educational status and the presence of a migration background, are found significantly more often among offliners than onliners (p < .001). They are also less likely to be married or in a partnership, more likely to be divorced and more likely to be single (p < .001).

Table 8. Socioeconomic Characteristics by Internet Use and Total, Germany (Column %)

a		Internet use, dichotomised		
		Onliner	Offliner	Total
		%	%	%
Gender*	Male	51,68	41,21	47,14
	Female	48,32	58,79	52,86
	Missing values (n = 0)			
Relationship Status*	Married/Partnership	78,37	47,83	65,16
	Divorced/Sperated	7,23	9,58	8,25
	Widowed	11,06	36,28	21,97
	Single	3,34	6,30	4,62

18

	<i>Missing values (n = 7)</i>			
Level of education, categorised*	Low	12,33	41,33	24,82
	Mid	67,21	54,72	61,83
	High	20,46	3,94	13,35
	<i>Missing values (n = 7)</i>			
Migration background*	Yes	11,61	20,42	15,36
	No	88,39	79,58	84,64
	<i>Missing values (n = 26)</i>			

a. cntry_id = DE

*Pearson Chi-Square ($p < 0.001$)

The largest effect sizes in the chi-square test are found in the medium range for the difference between Internet use and educational status (*Cramer's V* = .375) and relationship status (*Cramer's V* = .335) as well as in the small range for social activities (*Cramer's V* = .216). An overview of all calculated effect sizes is shown in Table 11 in the Annex. Table 9 shows health and psychological aspects according to online and offline users, as well as for the German total sample. Significant differences ($p < .001$) between online and offline users are found in terms of happiness, life satisfaction, trust in other people, subjective health and participation in social activities. Effect sizes range from small to medium, with age showing the largest effect size at $r = 0.339$ and life satisfaction at $r = 0.176$. The exact results of the Mann-Whitney U Test are shown in Table 17 to 18 (see Annex).

Table 9. Health-related and psychological characteristics by internet use and total, Germany (Column %, Mean and SD)

a	Internet use, dichotomised								
	Onliner			Offliner			Total		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
How happy are you	8,07	1,59		7,48	2,22		7,81	1,91	
	<i>Missing values (n = 0)</i>								
How satisfied with life as a whole	8,16	1,73		7,39	2,18		7,83	1,97	
	<i>Missing values (n = 0)</i>								
Most people can be trusted	5,66	2,28		4,98	2,70		5,37	2,49	
	<i>Missing values (n = 0)</i>								
Satisfaction with health*	Rather good		89,99			78,80			85,14
	Rather bad		10,01			21,20			14,86
	<i>Missing value (n = 3)</i>								
Take part in social activities*	Less		30,15			51,38			39,31
	Same or more		69,85			48,62			60,69
	<i>Missing value (n = 8)</i>								

a. cntry_id = DE

*Pearson Chi-Square ($p < 0.001$)

With regard to religiousness, an average value of 4.60 (\pm 3.04) was calculated for online users. Offliners showed a mean value of 4.75 (\pm 2.91). The difference between the two groups is not significant in the Mann-Whitney U Test in terms of religiousness (p = 0.376). The German overall sample shows a religiousness of 4.66 (\pm 2.98), with 7 missing values.

2.3 Japan

2.3.1 Methodology

The data for Japan were obtained from the results of the 9th International Comparative Survey on the Lives and Attitudes of the Elderly, conducted by the Cabinet Office in 2020-2021. This survey was conducted in four countries: Japan, the United States, Germany, and Sweden. The subjects were men and women aged 60 and over living in each country, excluding those in institutions.

In Japan, a mail survey was conducted in January 2021 to 2,500 people selected by stratified two-stage random sampling. Based on the responses of 1,367 valid respondents on the use of communication devices, Onliners and Offliners of the Internet were defined as follows.

Onliners in the Japanese survey were defined as those who used e-mail, cell phones or smart phones, or gathered information or did shopping on the Internet.

Offliners in the Japanese survey were defined as those who did not use a fax machine, cell phone or smart phone, or the Internet.

2.3.2 Results

Table 10. Socioeconomic Characteristics by Internet Use and Total, Japan

		Internet use, dichotomised		
		Onliner (1099)	Offliner (183)	Total (1282)
a		Column N %	Column N %	Column N %
Gender *	Male	49.14	38.80	47.66
	Female	50.86	61.20	52.34
Age *	60-64	16.11	6.56	14.74
	65-69	25.20	7.65	22.70
	70-74	28.03	22.95	27.30
	75-79	17.47	17.49	17.47
	80-	13.19	45.36	17.78
Relationship Status **	Married/Partnership	74.34	47.54	70.51
	Divorced/Sperated	6.19	6.01	6.16
	Widowed	12.92	32.79	15.76
	Single	4.82	9.84	5.54
	Single for health or care reasons	1.36	3.28	1.64

	<i>Missing values (n = 9)</i>	0.36	0.55	0.39
	Healthy	54.68	33.33	51.64
	Not very healthy, but not sick	38.76	51.91	40.64
Health Status **	I am sick and sometimes in bed	3.91	9.84	4.76
	I am sick and stay in bed all day	0.45	3.83	0.94
	<i>Missing values (n = 33)</i>	2.18	1.09	2.03
	Less than 50,000 yen	1.09	7.65	2.03
	50,000 to 99,999 yen	7.92	19.67	9.59
	100,000 to 199,999 yen	24.57	36.61	26.29
	200,000 to 299,999 yen	30.57	19.67	29.02
Average monthly income (total of husband and wife) **	300 to 399,999 yen	15.92	7.65	14.74
	400,000 to 499,999 yen	7.64	1.64	6.79
	500,000 to 599,999 yen	3.28	0.55	2.89
	600,000 yen -	5.10	0.00	4.37
	No income	0.27	0.00	0.23
	<i>Missing values (n = 60)</i>	3.64	6.56	4.06
	Satisfied	83.44	73.22	81.98
Life Satisfaction *	Dissatisfied	14.83	24.04	16.15
	<i>Missing values (n = 31)</i>	1.73	2.73	1.87
	Work with income **	41.13	15.85	37.52
Take part in social activities	Other social activities **	43.59	24.04	40.80
	(Religious and political activities) *	4.37	1.64	3.12
**Pearson Chi-Square (* p < .01, ** p < .001)				

2.4 Input for e-VITA development

The aim of the analysis was to get an overview of which people aged 65 and older use or do not use the Internet and in which aspects these two groups differ. The results serve as important input for the implementation of the future e-VITA coach and provide information about which groups of people should be given special consideration in further development in order to be able to reach those who have had no previous experience with digital technologies. For this purpose, analyses of the 2018 ESS were conducted with data from Italy, France and Germany, and Japanese data from the 9th International Comparative Survey on the Lives and Attitudes of the Elderly were analyzed. The results show that over half of German (56.96%) and French (59.9%) adults already use the internet. However, the picture is different in Italy, where only 39.14% of respondents over the age of 65 use the Internet. Another study (Carlo & Vergani, 2016), report that Italian digitized older people are a minority of the population between the ages of 65 and 74, confirming a “classical” dynamic of the digital divide

influenced by socio-economic dimensions in which economic, social and cultural capital give rise to processes of digital inclusion-exclusion. In fact, the data indicate that possession and use of ICT is accompanied by a better socio-economic condition, better physical activity, a larger network of friends, a lower perception of being old, a general personal satisfaction, as well as interests and self-confidence.

In the present survey in Japan, the Internet usage rate cannot be clearly calculated. According to another survey conducted by the Ministry of Internal Affairs and Communications in 2020, the percentage of Internet users aged 60-69, 70-79, and 80 or older decreased sharply as their age increased: 82.7%, 59.6%, and 25.6%, respectively.

The standardized data collection between the countries enables this direct comparison of the results and can be highlighted as a strength of the analysis. In this context, however, it must also be mentioned that the dichotomization of Internet use is often met with criticism, as this does not do justice to the heterogeneity of seniors as a user group (Vulpe & Craciun, 2019). In addition, the specific use of the Internet may also have specific influence on the life of older adults. For example, older adults who use the Internet to obtain health information show significantly better overall health and happiness than those who seek information offline only (Rains, 2008). However, these specific uses of the Internet do not emerge from the ESS data.

With regard to socioeconomic differences between online and offline users, online users in France, Germany and Italy are significantly more likely to have a medium or high level of education. A German study by Quittschalle et al. (2020) investigated which factors favor Internet use among people over 75. The study found that **male gender, lower age and higher educational attainment were the main factors that increased the likelihood of Internet use. Male gender and a higher level of education were the strongest predictors.** The authors attribute this phenomenon to the fact that, especially among "old" older adults, stereotypes prevail that attribute the use of technology more to the male role. However, this circumstance could change with the coming generations. Furthermore, Hunsaker and Hargittai (2018) describe in their review a study by Chu (2010) which reports that men have a significantly higher rate of self-confidence regarding Internet use than women. **For e-VITA, this means that care must be taken in development and implementation to avoid reproducing gender stereotypes and to actively encourage (older) women to learn how to use the technology.** However, gender-specific effect may decrease with increasing age and self-efficacy and interest in the Internet come to the fore (Falk Erhag, Ahlner, Sterner, Skoog, & Bergström, 2019). However, the studies are inconsistent regarding the relationship between gender and Internet use. Some studies report that no differences exist, while others report that women use the Internet more often than men (Fang, Canham, Battersby, Sixsmith, Wada, & Sixsmith, 2019). Furthermore, for all three European countries, it could be shown that within the onliners, married persons or persons in a partnership appear significantly more often. The definitions of Onliner and Offliner in Japan are slightly different from those in the EU survey, but the results are similar. The reason for this could be that the partner or family members encourage the older person to use the Internet, and older children could show their (grand)parents how to use the Internet (Chang et al. 2014). However, this assumption is contradicted by the fact that in the present analysis, offliners more often have more children and grandchildren. However, this could also be related to the older age (with regard to the grandchildren). Moreover, the number of (grand)children says nothing about the willingness of the (grand)parent to acquire the necessary skills. This phenomenon should be investigated in further studies using inferential statistical methods in order to shed more light on the influence of (grand)children on the use of the Internet by older adults.

Furthermore, the German data shows that within the offliners, significantly more people have an **immigrant background**. However, this is not the case in France or Italy. One possibility for the increased non-use of older people with a migration background could be a language barrier (Chang, 2014). Another study by Samkange-Zeeb et al. (2020) investigated in eight culturally diverse neighborhoods of four different countries (two each in Birmingham, UK; Bremen, Germany; Lisbon, Portugal; Uppsala, Sweden) what influence a migration background has on the use of internet-based health information. The study shows that **first-generation migrants, poor knowledge of the native language, higher age and lower education level are associated with lower odds regarding the use of Internet-based health information**. The researchers attribute this to existing language barriers within countries, poorer living conditions, and limited access to information. Therefore, **when developing the e-VITA Coach, care should be taken not to overlook special needs of older migrant and, at best, to include them in the development**. Translation of the coach into languages other than the national language or bilingualism of the coach could also be considered at a later stage. In addition, Samakange-Zeeb et al. (2020) also found different effects between countries. For example, the age effect disappeared completely in the analysis of Uppsala, Sweden. This again highlights the relevance of cultural and structural differences between countries, which are taken into account in the e-VITA project.

In all European countries, the present analysis identified that **online users are significantly more satisfied with their health, have higher life satisfaction and are generally happier**. This is in line with the results of previous studies. Hunsaker and Hargittai (2018) refer to the studies of d'Orsi et al. (2014) and Yu et al. (2016) which show that Internet use among seniors is associated with self-reported health as well as with a lower risk of developing functional limitations. Likewise, a study by Falk Erhag et al. (2019), which examined 1136 Swedes over the age of 70, shows that increased internet use is associated with better self-rated health. However, internet use itself appears to play only a minor role in this, with other health or social factors playing a larger part in explaining this phenomenon. The low effect size between Internet use and health should also be noted in this analysis.

With regard to activities in comparison to other people of the same age, it can be seen that **offliners are significantly more likely to report doing fewer social activities than people with same age**. Szabo, Allen, Stephens, and Alpass (2017) also show in their longitudinal study that **Internet use can promote social engagement and reduce loneliness**. However, the researchers point out that simply being online is not enough for this to happen, but how individuals engage with the digital space matters. Thus, social use of the Internet (e.g., contacting friends/family) was the only predictor regarding loneliness. These results underscore the relevance of supporting older individuals in using the Internet for social interactions. e-VITA offers a first basis for this with its planned integrated social platform. Furthermore, Szabo et al. (2017) show that Internet use for social, information-related (e.g., reading health information), or instrumental intentions (e.g., online banking) can improve overall well-being over time, as it is associated with reduced loneliness and/or increased social engagement. However, it must be taken into account at this point that the determination of social activities by means of the question "Compared to other people of your age, how often would you say you take part in social activities?" can be accompanied by a certain bias. It is conceivable that the perceptions of the activities of "*a person of the same age*" can differ significantly, so that the respondents may over- or underestimate their social activities. As for the social activities of the elderly in Japan, the percentage of Onliners who are employed is much higher than that of Offliners (41.1% v.s. 15.9%). This may be due to the fact that they often use the Internet for work.

In terms of religiousness, offliners consider themselves to be more religious than onliners, but this difference in the Mann-Whitney U test is only significant in France and Italy. Due to this fact, the

consideration of spirituality and religiosity in the **e-VITA Coach could offer a starting point, especially in these two countries, to motivate people who have had no contact with modern technologies so far to deal with them, as they could support them in the practice of their religion.** However, one obstacle to implementing the e-VITA coach could be the indication in the present analysis that offliners generally trust other people less than onliners. This circumstance highlights the relevance that all functions as well as the potential benefits or even risks are presented to the user in a transparent and understandable way and that users have time to try out the coach and become familiar with it. The proportion of Japanese elderly who were religiously or politically active was small, less than 5%, regardless of whether they were Onliners or Offliners. There seems to be little need to include religious or political components in e-VITA coaching in Japan.

3 Stakeholder Interviews

3.1 Materials and Method

In order to explore the field of secondary stakeholders in regard with e-VITA we choose to use qualitative data. To do this we developed a semi-structured interview guideline based on the PESTEL framework and then translated into the languages of the countries doing the interviews. The interviews were conducted in two different steps and timing:

- Wave 1, during March/April 2021,
- Wave 2, between August and November 2021.

Wave 1	Wave 2
<div style="background-color: #4CAF50; height: 20px; width: 100%; margin-bottom: 10px;"></div> <input type="checkbox"/> What are the unmet needs of older people your organization is working with, that could be satisfied with such a coach like e-vita?	<div style="background-color: #4CAF50; height: 20px; width: 100%; margin-bottom: 10px;"></div> <input type="checkbox"/> Are you aware of any mainstreaming ageing policies in your country?
<input type="checkbox"/> What features/functionalities should the e-vita coach have? (from the point of view of your organization)	<input type="checkbox"/> Are you aware of The UN healthy decade of healthy ageing? Do you know any country that is implementing that shift towards healthy ageing politically?
<input type="checkbox"/> How could such a coach fit in the ongoing activities of your organization? (e.g. lifestyle support; monitoring health; mobility; social activities, general support, etc.)	<input type="checkbox"/> Which social policies are available in your country, to support AHA?
<input type="checkbox"/> What are barriers to the adoption to a technical solution like e-vita? (ethical; data security; legal; practical: like access to internet, affinity to technology, fears towards technology)	<input type="checkbox"/> Can you describe which should be the target of e-Vita, in your opinion?
<input type="checkbox"/> Which possibilities of funding/reimbursement do you see for such a system? What value do you see in such a system? What could be the willingness to pay ?	<input type="checkbox"/> Which are the social resources that can support the introduction of e-Vita in the daily life of older people, their family and professional carers?
<input type="checkbox"/> What social role would you give the coach? (Is it more like a friend or a doctor or ... ?)	<input type="checkbox"/> Which is the social representation of technology, especially AI and virtual agents, in your country? Do you see any difficulty in use, acceptance...?
<input type="checkbox"/> What would be the benefit of such a system for you or your organization? How should it be shaped in order to benefit you or your organization?	<input type="checkbox"/> Are there any strategies to support health/e-health and digital literacy, that can be useful to include and mentioned in the e-Vita project?
<input type="checkbox"/> What are your key messages to support the coach/intervention? (from each stakeholder 3, if possible)	<input type="checkbox"/> Which incentives do you think are available in your country to support technology for AHA like e-VITA?
	<input type="checkbox"/> How would you describe the level of innovation of your country, in terms of trends on innovative technology for AHA and public-private investments?
	<input type="checkbox"/> Which are the major barriers to the adoption of system like e-Vita, on the stakeholders' point of view?
	<input type="checkbox"/> Who can be the key actors and the driver to support the system diffusion?
	<input type="checkbox"/> At educational level, do you think there are enough resources in your country, to support the appropriation of technological skills by the more disadvantages users or citizens willing to learn (e.g. life-long learning)?
	<input type="checkbox"/> About insurances and reimbursement schemes, which are the opportunities for system like e-Vita, to be introduced in the public/private services? And in the private market?
	<input type="checkbox"/> Which are the more relevant ethical barriers you see, behind the adoption of AI-based system for AHA? And robotics and virtual agents?

Figure 3. Semi-structured interview guideline for Waves 1 and 2

For the Wave 1, interviews in Germany have been done by video call with the Zoom software. The interviews were 1-on-1 and focus group interviews. In France, the interviews have been done by video call with Teams software. 2 interviews were focus group and one interview was conducted with the participant and the 2 experimenters.

Most interviews were recorded and later transcribed. One interviewee did not want to be recorded; notes have been taken instead. The data collected was analyzed by building categories. In total six categories have been built: unmet needs of older adults; Functionalities of the Coach; Integration in Organization; Barriers; Finances; Social Role of Coach. The building of categories was a deduction of the question asked in the interview guidelines.

The questions were slightly modified for the conduct of the interviews in France, so the categories constructed differ slightly from those used by the other partners. In total six categories have been built: unmet needs of older adults; Functionalities of the Coach; Physical characteristics and attitude of the virtual coach; Interest in using/financing; Finances; Barriers.

In Italy, the interviews were conducted following the methodology proposed by the coordinator of the activity. It was decided to maintain the same structure of the questions, to allow the comparison with the other countries. The stakeholders were recruited by means of contacts with them due to past research projects, especially, the More Years Better Life ACCESS. All the interviews were recorded and then transcription was made. The same categories of the coordinator were used for the analysis.

For the Wave2, most interviews were recorded and later transcribed. The data collected was analyzed by using the original PESTEL factors. In total five themes have been built: political, economic, social, technological and legal factors.

In Japan, all items were conducted as a self-written questionnaire (Fig. 4) in Wave 2. Because it was not easy for the stakeholders to secure interview time even if they were online due to the COVID-19 pandemic during this time. As we substituted the questionnaire for the interview, that survey could advance as planned not to delay. This questionnaire was added the following several original items to clarify the Japanese character to each domain:

Political (P): P3.1. "In your experience with measures for the aging of society, have you ever been aware of the relationship between the relevant policies of other countries and Japan's policies?" P3.2. "Do you have any experience in handling personal information in particular? If so, please let us know."

Economic (E): E1. "How much would you estimate the unit cost of e-VITA's services to be?" E2. "Please let us know if you have any comparable costs for providing similar services."

Social (S): S6. "Please tell us about any difficulties or innovations you had in the past when introducing similar ICT devices." S7. "Please let us know if there are any matters that we should pay special attention to when providing e-VITA services in the COVID-19 pandemic."

Technological (T): T6. "Please let us know if there are any areas that we should focus on regarding the superiority of e-VITA's services."

Environmental (E): E. Please let us know if there are any issues that we should keep in mind from the perspective of SDGs and Society 5.0.

Legal (L): L3.1. "Have you ever been aware of international and domestic laws and their relationships in your experiences related to aging and other measures?" L3.2. "Please let us know if there are

any concerns that we should be aware of, especially regarding the handling of personal information, etc.” L4. “There is a possibility of cross-border exchange of data between Japan and the EU. Please let us know if you have any experience or knowledge about cross-border data exchange and movement.”

[Questionnaire]	
Question	Answer
Please choose one from the following five that is closest to your area of expertise: Political, Economic, Social, Technological, Environmental, Legal	

[Questionnaire based on PESTEL Framework]

* Please answer as many of the following questions as possible, focusing on your area of expertise. Items that are difficult to answer may be left blank.

Factors	Topics	#	Questions	Answers
Political	Demography Government regulation and deregulation Political action committees Level of government subsidies ...	P	Can we use already available data on this topics?	
		P1	Are you aware of any mainstreaming ageing policies in your country?	
		P2.1	Are you aware of The UN healthy decade of healthy ageing?	
		P2.2	Do you know any country that is implementing that shift towards healthy ageing politically?	
		P3.1	In your experience with measures for the aging of society, have you ever been aware of the relationship between the relevant policies of other countries and Japan's policies?	
		P3.2	Do you have any experience in handling personal information in particular? If so, please let us know.	
Economic	Growth rate Interest rate Exchange rate Availability of credit Level of disposable income Propensity of people to spend	E	Can we use already available data on this topics?	
		E1	How much would you estimate the unit cost of e-VITA's services to be?	
		E2	Please let us know if you have any comparable costs for providing similar services.	
Social		S1	Which social policies are available in your country, to support AHA?	
		S2	Can you describe which should be the target of e-Vita, in your opinion?	
		S3	Which are the social resources that can support the introduction of e-Vita in the daily life of older people, their family and professional carers?	
		S4.1	Which is the social representation of technology, especially AI and virtual agents, in your country?	
		S4.2	Do you see any difficulty in use, acceptance...?	
		S5	Are there any strategies to support health/e-health and digital literacy, that can be useful to include and mentioned in the e-Vita project?	
		S6	Please tell us about any difficulties or innovations you had in the past when introducing similar ICT devices.	
		S7	Please let us know if there are any matters that we should pay special attention to when providing e-VITA services in Corona Mishin.	
Technological	Technology incentives Automation R&D activity Technological change Access to new technology Level of innovation Technological awareness Internet infrastructure Communication infrastructure Life cycle of technology	T1	Which incentives do you think are available in your country to support technology for AHA like e-VITA?	
		T2	How would you describe the level of innovation of your country, in terms of trends on innovative technology for AHA and public-private investments?	
		T3	Which are the major barriers to the adoption of system like e-Vita, on the stakeholders' point of view?	
		T4	Who can be the key actors and the driver to support the system diffusion?	
		T5	At educational level, do you think there are enough resources in your country, to support the appropriation of technological skills by the more disadvantages users or citizens willing to learn (e.g. life-long learning)?	
		T6	Please let us know if there are any areas that we should focus on regarding the superiority of e-VITA's services.	
Environmental		E	Please let us know if there are any issues that we should keep in mind from the perspective of SDGs and Society 5.0.	
Legal	Health and safety laws Education laws Consumer protection laws Data protection laws	L1.1	About insurances and reimbursement schemes, which are the opportunities for system like e-Vita, to be introduced in the public/private services?	
		L1.2	And in the private market?	
		L2.1	Which are the more relevant ethical barriers you see, behind the adoption of AI-based system for AHA?	
		L2.2	And robotics and virtual agents?	
		L3.1	Have you ever been aware of international and domestic laws and their relationships in your experiences related to aging and other measures?	
		L3.2	Please let us know if there are any concerns that we should be aware of, especially regarding the handling of personal information, etc.	
		L4	There is a possibility of cross-border exchange of data between Japan and the EU. Please let us know if you have any experience or knowledge about cross-border data exchange and movement.	

That's all for now. Thank you very much for your cooperation.

There is a possibility that we may ask for further details based on the results of this survey.

Figure 4. Self-written questionnaire for stakeholders in Japan

3.2 Italy

3.2.1 Results from the first wave of interviews

In Italy, 3 interviews with experts/stakeholders were conducted. Participants involved were:

- IT01: (Female, 35 years old) volunteer teacher of computer and digital technologies course at the University of the Third Age of Ancona (Unitre Ancona), local Ngo association for learning courses that target older people;
- IT02: (Male, 71 years old) Regional Secretary FNP-CISL MARCHE (reference acronym of one of the main Marche region Union for pensioners), Head of Department of Social, and Health Policies;
- IT03: (Female, 64 years old) president of AUSER Marche (2017-2020), a non-profit association that, at the regional level, self-manages various activities in the field of social and cultural life, in the spirit of mutual aid and active aging, including “Filo D’Argento”, the telephone friend service of the older people to win the loneliness.

Unmet needs of older adults

On the topic, IT01 states: *“From my experience, the fundamental need of the older age group is not so much to have knowledge of the technological tool itself, but education in its use. This pertains to the medical-health domain, but also to all communication with public-institutional services: there is a lack of easiness in understanding procedures. What I have noticed, also from the requests I receive from older adults-students, working almost exclusively at a distance in the last year - and with our University of the Third Age we have managed to keep 30 courses - is that they want learning that concerns new aspects, for example Skype, a tool they did not use before”.*

For IT02, the Covid-19 pandemic brought digital and technological inequalities to the surface, particularly in our senior pensioner organization: *“Initially there were very few who knew how to move into the digital world, but the emergency also brought a benefit and, so far, many of our members are using these tools better. Therefore, we continue to work to reduce this gap. Consider, for example, the Digital Identity service: many older people do not know what it is and have not yet achieved it, but this then creates an obstacle to even requesting bonuses or making the most of online public utility services, and in fact becomes an unmet need”.*

In relation to the pandemic situation IT01 also reports that. *“Similar difficulties are relevant also regarding Covid-19 and this is what has happened with the booking of vaccines: the online procedure is quite complicated for them, there has been a lack of connection with the institutional environment that provides the service and a lack of promotion of the use of technological tools. In addition to educational deficiencies in the use of technology, which are also present in the younger generations. A robot that is able to provide correct information and procedures would speed the process, for example in booking, health services: this would be optimal”.*

For IT02, e-Vita could be an effective solution to counteract the increased digital divide after the COVID-19 crisis: *“However, I think that not only a union, but also especially politics, should address this issue. Surely, such a robot is a very effective tool to help the older person perform practical tasks that they are unable to do on their own, but we need first to enhance the skills to use the technology”.*

For IT03, there is a special need of system like e-Vita and social robotics in general, due to living arrangements, scarce mobility and disability of the most vulnerable older population: *“In our territory many older adults live in houses with several floors, often without elevator, they live alone, mostly*

women, because they live, on average, 4 and half years longer than men, often with low pensions. When they begin to experience even a minimal disability, with our association, we provide accompanied social transport, delivery of food shopping and medicines at home. These are basic needs, because these people are unable to connect with the outside world: between 60 and 70% of those who do not network are seniors over 65, and the Covid-19 pandemic has made these problems even more evident. Therefore, a robot that would be made available to them would have to facilitate connection with the outside world, first, with their family doctor”.

Functionalities of the Coach

Most of the attention was given to support digital but also health related skills, as two of the participants are used to provide courses and interventions on this specific topic.

IT01 reports that: *“For the characteristics of our didactics, the robot should be able to give assistance through chat or modules structured in multiple-choice quiz. This could effectively involve the older user who thus becomes familiar with the technological tool, interacts directly with it, possibly with the option of downloading a file or document, and would be even more effective. For instance, even with regard to a medical reservation, if the robot is directly connected to regional or municipal health services: e-VITA could provide instructions or pointers to the older person, identifying the correct procedure to follow, the calendar, the available hours. Or, even in a more 'futuristic' way, directing the user to the booking web page and following step by step the older people request, according to specific needs”.*

IT02 has pointed out the relevance of the system also in health-related activities: *“Starting with booking medical appointments and this could considerably reduce the discomfort of waiting on the phone or going in person. Another very important function is the pharmaceuticals reminder, since the older person often has to take several pills/drugs, having a similar coach to warn him promptly is a very precious resource”.*

IT03 considers the connection of the system with telemedicine system for *“measuring some basic health parameters, currently, for example, an important data as of oxygen saturation in the blood”.*

Finally, a very relevant aspect is that of promotion or information on healthy lifestyles. For IT02: *“It can be a robot that guides you even during the day. I am referring, for example, to something very important that we older people tend to forget, that is, to drink water for proper hydration, even more relevant in summer. Maybe the robot can remind, ask the older person, or bring, put the water bottle closer so that the older person can see it and remembers”.* For IT03 the integration with home environment is a key factor: *“It should then be the 'heart of the house': equipped with commands that allow you to turn on and off the TV, light, heat or cook stove, or to answer the phone, integrating with the entire home environment in smart, as home assistant living, or communicating with security sensors and alarm devices or lifesavers”.*

The interaction with the system should be simple for IT03: *“the system should have the ability to connect to the Internet with simple voice commands, to search for information”,* while IT01 states that: *“What is needed is an interactive mode, not a static one, based on learning by doing: the older adult should not find him/herself in front of a tool that merely communicates only in one direction. The robot, clearly, especially at the beginning, must guide by indicating simple steps, make available, for example, an icon or feature for help in case of trouble, possibly even including human support, with the assistance of an operator. An interaction of a dialectical nature would calm the older person, not make him or her intimidated in front of the technological tool, obviously, always with a few simple steps to follow”.* Also,

IT03 suggests to keep it simpler: *“the commands must be simple and intuitive, this, in general, is a fundamental condition: few buttons, almost all functions activated by voice”*.

Integration in Organization

For IT01, the system can really support the sharing of information within the participants, especially on lifestyle: *“I see that from our courses, participants tend a lot to exchange lifestyle information, especially if there are some chronic health problems, even not so serious fortunately, for example regarding excessive weight or diet. From my experience, I have noticed that many older people feel a bit like a 'burden', and with our courses they get back into the play, they reactivate from a cognitive point of view but also from a physical point of view, because some courses also involve activities with the body. A robot that helps them to share, to feel involved and also useful to other peers and that, at the same time, creates a database of this data, would be essential: it would allow them to 'humanize' the experience even more, to become more 'social', to be a shared platform where they can find themselves. It could also be very useful to coordinate aspects of our courses, making the characteristics of our educational program more homogeneous”*.

IT02 reports that the system can support the older people in the daily life of the association, for example, *“reminding our members of the terms of payment of taxes or bills, or giving information on bonus opportunities for people on low incomes and give a complete and updated overview of the social activities of our association, and give a communication, an immediate notice to the member: I would mention, for example, the cultural tours, moments not only recreational but fundamental to socialize and feel good together”*.

Also IT03 reports the usefulness of the system for the organization: *“it should be linked to our social activities and courses and would help the work of the association, as well as perhaps promoting a correct lifestyle and physical activity or mobility, as we already organize gym courses for the older people. Alternatively, it could help us with our home food delivery service, receiving the list of products said by the older person, then transmitting the order to Auser Marche or the supermarket. It could be the tool connecting our organization to the members. For example, with the function of calling to numbers of our offices, by voice command, or the call to use our home transport service: the robot could memorize the bookings of visits or health check-ups, calculating the frequency, for instance, that that older person turns to our accompanying service once a week. Considering e-VITA as a very advanced technological system, for medical use, the robot could process health records/profiles of each older person who turns to our association”*.

Barriers

For IT01 and IT02 the internet access and connection are the most relevant barriers. IT01 reports that the stability and speed of the connection is a problem that is still persistent, not only locally, but also nationally. Also, security was mentioned as a critical issue by IT03: *“The internet connection is essential for the operation of the system, and therefore connect the system to health services or even home banking, also overcoming that barrier that often concerns security, perhaps with the function of facial recognition, connect the person directly to the online service required”*. **Anyway, IT01 states on privacy and security issue that** *“by now, even older users are more used to dealing with this, they are more aware that some data are necessarily shared, and if e-VITA is guaranteed by a regional or municipal public institution, they would trust it”*.

A second barrier is non-knowledge, and therefore, fear of technology, and “it does not only concern students: many of our teachers are also older adults, volunteers, who are not familiar with such tools and sometimes give up using it” - reports IT01.

Regarding the system appearance, a possible barrier concerns the aspect of the robot or interface, for IT02: “the image they might have of the robot: if it looks too much like a sort of big 'toy', they would see as an entertainment, less as a functional and useful tool for more practical, serious or work needs”. For IT03: “The system does not have an aspect that is too human, which could frighten the older person: a tangentially neutral form, pleasant for sure, but it must also be manageable, for example, I can imagine that it has a horizontal support surface on which to rely, it should be robust, thus giving a feeling of solidity in case of need”. Finally, for IT03 “there may be a more practical barrier, certainly at first, but after an initial adaptation, some initial hesitation related to novelty, or even curiosity, it is not an issue that the robot appears 'humanized”.

Finally, for IT03: “The digital barrier, the practical barrier of using technology, and the barrier of the older person's own fear of these tools, can be overcome if the system is able to perform all the functions that meet the needs of the older people”. At this purpose, it is important to “setting up the robot in such a way that, especially in cases of more serious illness for example, it does not violate the privacy of the person, obscuring or not taking videos with the image of the person being cared for. Indeed, e-VITA should also be a system of further guarantee of the intimacy of the domestic space that makes the older person feel even safer at home. This coach should be programmed in such a way as to be simple for the older person, for example, with a series of commands-guides that can be typed without too many dispersive steps, warnings in case of error and the possibility of performing the previous operation without troubles”.

Finances

All the participants stressed the important role of the system and its very broad value to take into account, as it may support the older person live well in their own home, without having to resort to a nursing home. It may allow effective intervention in the health field from a preventive point of view. It can also give great benefits to reduce isolation and also, emotionally, improving the mood against more depressive drifts. It can strongly support the health system, connecting more directly to public services, without the need, for example, to have to physically go to the hospital to pick up the analysis.

In order to support the purchase of the system, IT01 depicts two possibilities:” *The first would have to involve funding from the public institution, which could then provide it free of charge to certain users with low incomes or serious and disabling diseases, or that require constant monitoring, such as diabetes. The second is payment for the service, by subscription, monthly and even annually, and health is an area that is increasingly interesting, not only for the older person. Considering that our healthcare is public, with the reimbursement mechanism, there would also be a willingness to pay for such a system”.*

For IT02, the intervention of the Italian and EU government is essential: “the Italian government, or even the EU government, should invest, making available public resources to finance it and make it arrive in homes at a very low cost. Moreover, free, in particular, for the less wealthy, with a progressive income that identifies the paid service for those who actually are in economic conditions to support it. For the launch of the robot, however, it is necessary to invest many resources, giving users the opportunity to take advantage of a system of refunds, bonuses, tax incentives, at a much lower cost. It would also be a

demonstration of the value of this tool for improving the welfare of the person and therefore of the whole community”.

IT01 advice on the centrality of the human coach: *“the technical intervention cannot disregard the involvement of professionals, starting from engineers, if there is not an infrastructure and a network of assistance so powerful and high-level that allows the management or update from home, directly by the user, as happens for the well-known Alexa system”.*

For IT03: *“The cost of the robot should be correlated to income, with incentives or reimbursements from the national public health system, and to health conditions, to the fact that the person lives alone or in a couple. If the older person lives alone, with low income and/or more debilitating diseases, the robot should be a free service, and, on the other hand, could be part of a system of incentives and bonuses, even as a private expense”.*

IT02 states that it is difficult to estimate the cost of the solution: *“it can be a term of comparison, a large household machine as a fridge, as a minimum, I would say that the willingness to pay is 1,400-1,500 Euros. It is not such a low budget, we should also think about subscription formulas or rent: in particular, for more limited time needs, maybe to have a support in case of rehabilitation at home, or post-operative, as it already happens, for example, with a much more traditional tool such as the wheelchair”.* **Also IT01 suggests a monthly subscription:** *“I think that the user may be willing to pay a subscription of about 20 Euros per month, a formula similar to the loan for use, as for example already happens for the modems of the companies that provide internet and telephone services. In an initial phase, when the robot is in Beta version, the price should be slightly lower, about 10-15 Euros per month, then, when it is fully developed, it can be even 30 Euros per month. When it is a final product, ready for the market, the purchase price, one-time, could be a minimum of 400-500 Euros, obviously associated with a reduced annual subscription, however necessary for the assistance of professional tech support”.*

For IT03, *“it could cost up to 3,000 Euros: for instance, my mother is 91 years old and lives at home alone, and I would convince her to buy it because it would make her life much easier”.*

Role of the coach

IT01 considers the coach more like a careful professional, in the middle between a doctor and a friend: a point of reference, a sort of 'virtual person' or consultant you trust, capable of listening to the special needs of the older person, avoiding a too anthropomorphic shape: *“it should not have large dimensions, because it would give more the feeling of being controlled or invaded by technology, than of a tool that serves to help. A more symbolic, geometric form, perhaps leading back to an imaginary linked to health, would be appropriate, as a kind of information point to which to address for health: it can also have a face or a more human visage in the design, but without excess”.* It should be a link between doctor and older patient, and can therefore be a very powerful tool for the implementation of telemedicine.

Also IT02 consider the system as having essentially a "clinical" role, a powerful support tool for home care and for the development of telemedicine and digital health management (i.e. eHealth). It should become a practice for the local health system, with the family doctor who connects to the robot, and use all the data for the care and assistance of the patient, monitoring all the parameters of the health of the older person. *“It is also very important to play the role of a home assistant for daily practical needs, who can clean the floor or dishes, or put objects back in place”-* reports IT02. Moreover, for IT02, the robot can also have an aspect that partly resembles man, *“but the person must govern it: is the human who must guide it. It definitely has a social aspect as well, as a companion, and you can become attached to it because you see it as a friendly figure that can help you, close to you. Even more playful,*

informal functions, such as playing a game of cards with the robot, should be included and bring the older people closer to the technology. I think that in a few years a similar robot can replace almost entirely the caregiver for many tasks, except for the assistance of serious cases of course, or for example, as a very advanced dispenser of medicines”.

Finally, for IT03, it would have a "bridge" role with all the digital potential and services, particularly health ones but not limited too, as a kind of facilitator. In addition, even more informal and friendly aspects are important, allow to maintain even a bit of sociality. To talk to each other with the robot, to ask questions and listen to the answers, with a dialogue based on the interests of the older person, such as, for example, get information on the time of the broadcasting of the favorite TV fiction.

Benefit for the organization

For IT01, the system would be definitely a plus for any organization like the one I work in: *“the benefits would be to inform and give relevant knowledge and, therefore, also able to educate the older student. This system should be made available to associations, organizations that deal with the older people, such as recreation/senior centers or nursing homes/hospices. For the university of the third age, in particular, it can be adapted to also increase the level of involvement and socialization of participants in the courses and the connection to the network of online public services, for example, municipality. It would be a service with enormous potential that would also attract student subscriptions: seeing a similar robot in an association, for the older people, would be a great motivator for the use of technology in general”.*

“For the union it would certainly be a benefit – reports IT02, similarly to IT03 -, especially, if it responds more and more to the organizational and coordination needs of the older members and therefore giving communication on social activities and maintaining a link more. In our associative reality we are not used to this, so it is clear that the robot would have to be adapted to be as multitasking as possible, focused however, on the objective of the psycho-physical well-being of the elderly person, and this would bring a benefit that starts with the individual pensioner and involves our entire organization. Nevertheless, it seems to me that to be more of a priority to integrate the robot with real health purposes, although, also with regard to our union association, we have seen an increase in isolation, especially among women, and in perspective, it is a tool of certain interest even for us”.

Key messages from Italian participants

“Seeing a similar robot in an association, for the older people, would be a great motivator for the use of technology in general”

"It's a coach that helps you know your health well"

"I would define it as the 'consultant of your well-being"

“It should then be the 'heart of the house': equipped with commands that allow you to turn on and off the TV, light, heat or cook stove, or to answer the phone, integrating with the entire home environment in smart, as home assistant living, or communicating with security sensors and alarm devices or lifesavers”

“Considering that it is a very advanced technology, it could cost up to 3,000 Euros: for instance, my mother is 91 years old and lives at home alone, and I would convince her to buy it because it would make her life much easier”

"A facilitator, a friend who makes my life easier and connects me with the world".

"For the launch of the robot, however, it is necessary to invest many resources, giving users the opportunity to take advantage of a system of refunds, bonuses, tax incentives, at a much lower cost".

"A very powerful support tool for home care and for the development of telemedicine and digital health management (i.e., eHealth)"

"You can become attached to it because you see it as a friendly figure that can help you, close to you".

3.2.2 Results from the second wave of interviews

Additional interviews with experts/stakeholders were conducted. Participants involved were:

- IT04: (Female, 52 years old) she is coordinator of innovation in schools, for the Fondazione Mondo Digitale, one of the most important stakeholders in Italy as Ngo of technological learning that also concerns older people.
- IT05: (Male, 61 years old), for 45 years has been working in the voluntary sector in the field of welfare and ecclesial-catholic philanthropy. Retired, he is an electronics technician, and worked in one of the main Italian telephone companies. From 1988 is the president, among the supporters and founders, of the Voluntary Association of "Casa Accoglienza Dilva Baroni". This municipal house of care in 33 years of activity, has hosted about 25.000 patients (actually, more than half, older adults) in day-hospital and family members of patients from Italy and abroad, offering a space and a comfort to these people in painful moments of their lives.
- IT06: (Female, 64 years old), psychologist, head of the Operational Unit for the Older Adults in the Social Policies Direction of the Municipality of Ancona.

Political Factors

Identifying similar perspectives, highlighted by the interviewees, in the domain of political factors and policies, it can be argued that the government and NGO associations can support policies of AHA, starting from our Constitution, because it is a right of utmost general interest. Then it depends on local policies that are implemented, and municipalities deal with this issue, they define interventions that relate to social, frailty and the third age. On paper, in Italy, the premises are very good; but whether policies are effective and virtuous, in practice, change from territory to territory, and then, often, inconsistent. There are social policies recognizable as recreational, leisure and sports activities dedicated to active aging. This then takes place in a local territorial dimension, at municipal level, while at national level there do not seem to be such identifiable policies. Therefore, e-Vita can support the initiatives promoted by the municipality with the manager of the home care or social services.

Economic Factors

The shared economic aspects are linked to refund or tax incentive systems. Without the public sector first allocating adequate resources and introducing it into the social-health services, it is unthinkable for e-Vita to enter the market as a product that older people can buy: with a bonus or guarantee/insurance/reimbursement program that is certainly an opportunity, but cannot be the solution. The investment must be made on the person, on the health professional salary that, among other tools, has the robotic tool. Consequently, is unthinkable that e-Vita has a market price or that the older person buys it, approximately, for €1,000 or €1,500. Public, centralized resources are needed: through the pension system, the state receives contributions, then it must also guarantee services. It can provide as a double option, make it available to the older adult who has already paid for private

insurance, or provide incentives/reimbursement tax bonuses, and make it available free through public health. How, it should be established in terms of progressivity of taxation, based on certified level of income/declaration to the fiscal authority, starting from a share of local taxes be allocated to finance this support system. In any case, this topic should be explored further.

Social Factors

The social factors concern the older person's needs, taking into account that the family context is also important to modify the role of the robot. The A. I. will be able to get very close to the older person, especially in human likeness, to make the person empathize, smile, remember and maintain memory. Certainly, the pandemic has created a strong social isolation of the older people from the family, the inability to contact and human affection; the robot, then, in the extreme situations, can succeed in compensating, to recover better living conditions: but it would be a pathological situation if the humanoid replaced man, we would go towards a degenerate society. Furthermore, digital learning of the older adult is the social resource to be included most in this process, as well as healthcare resources (e.g. family doctors and formal caregivers). e-VITA, at the beginning, can be difficultly accepted by older people in our society: most older adults need more time, should be prepared, guided and be part of the process of developing/design the robot, because innovation must always be accompanied, not imposed in society, and must be participatory, inclusive. e-Vita is a support for older people because the family environment is not always able to support the older adults: The robot, can pick up on signals, anticipate even the riskiest situations concerning health, and provide a response and intervention in real time. Social resources come from the local area, where the municipality enhances these social welfare services. The fundamental objective is to sustain the permanence of the older adults in their own living ambient and in the best psychological, environmental and social conditions.

Technological Factors

Technology drivers involves the pandemic, because it has led to an acceleration of the level of innovation, but this improvement is still insufficient, is far from the minimum objective, digital divide is severe, and mainly the private company pushes innovation, not the State, that is more a "controller" than a technological driver. The key players of technology acceptance and diffusion of e-Vita, are actors who move in the habitual life scene of the older person: children, grandchildren, one's own family doctor, other peers who have a role in coordinating and promoting sociality in the third age, as in recreational and educational associations (e.g. Universities of the Third Age). The priority actor is the national one, the central health system, and from there the involvement concerns regional and municipal areas, general practitioners and geriatricians operating in local territories in a "physical" network of service that comes directly to the older person. We need a public entity of reference, for example in the Ministry of Health or the health institution (e.g. Istituto Superiore di Sanità) that manages, coordinates and disseminates such a technological tool, because it is too important. However, barriers remain, especially cultural limits, but also financing inadequacies.

Legal Factors

Finally, the most common legal aspects are related to privacy, i.e. protection of a person's data. By improving the level of digital literacy, knowledge makes it possible to reduce the obstacle of invasion of the private sphere, and people trust more the way their data is treated. Particularly among the older people, there is still too widespread the idea that technology only takes control over the person, invades privacy by taking only personal and health data, while only with trust can this obstacle be overcome, to have experience of the advantages and help that these devices and services can give in daily life.

Confidentiality-privacy is a priority, considering that robotics systems should only be introduced to support specific actions, but they should not replace human interaction. Ethics issues pertain to design, but are more disputable between these stakeholders, on the one hand, a choice should be offered, between a more "humanized" aspect robot and one more like an impersonal object. On the other, it is plausible that can be more, only, an advanced technological device, not too anthropomorphic because more likely to be seen by older people as a replacement for empathy and affection of the person.

3.3 France

3.3.1 Results from the first wave of interviews

In France, we conducted interviews with 3 different stakeholder groups and interviewed a total of 5 persons. The stakeholder that we involved:

- **Insurances company:** Two participants (IC_P1 and IC_P2). Both work with health insurance and on innovation projects. During the interview IC_P2 had to leave the session for professional reasons.
- **Geriatrician:** One participant (G_P1). This doctor is a specialist in diseases and disorders of aging.
- **Municipalities of Paris:** Two participants (MP_P1 and MP_P2). Both work on social and medico-social action in Paris.
- **Pension prevention organization:** One participant (P_P1). Working in an organization that promotes ageing well in retirement.

Insurances company

Functionalities of the Coach

For IC_P1, the virtual coach would have functionalities capable of securing the person at home, advising him or her and putting him or her in touch with associations or organisations (IC_P1 "1. advise him or her, 2. perhaps see direct connections with local associations to be able to say "well this person expresses the wish to discuss and exchange and today could you contact him or her"). The coach could also identify possible cognitive and physical disorders and transmit this information to the medical profession (IC_P1 "the coach will serve to link the information afterwards to the medical profession, nurse or home care assistant if there is one, will take the decision or will help, will convince the elderly person to accept a solution") in order to offer him/her personalised support (IC_P1 "And therefore to be able to better accompany him/her and better target the projects that are aimed at this person who lives at home"). As for IC_P2, he would like the virtual coach to have functionalities for each dimension of ageing well (IC_P2 "There is the part that I will call support for daily life, it is both the form of the agenda, the organisation. There's the social activities part which is a step above daily life, so it's the link with loved ones, discovering new things."). There is also the (IC_P2 "adapted physical activity, another one that does psychological well-being, another one that does nutrition."). The aim of the functionalities should be to simplify the user's life (IC_P2 "How do we hide the complexity for the user, how do we make his life easier? And if we're talking about making it easier to age well, we have to make it easier to live with nutrition, physical activity, social links and organisation. ").

Physical characteristics of the virtual coach

Both participants expressed the interest in having different types of media for the virtual coach in order to adapt to the needs, preferences and culture of the elderly person (IC_P1 "We are not all made in the same way, so retired people are all very different and, in addition, the Japanese retired person and the European retired person do not have the same approach to new technologies, so there you go"). The

form of the coach can be an application on a smartphone or an object (IC_P2 "So for me it can have any form. It can also have two forms, either a usual form for those who are used to the smartphone and then for those who are not comfortable with a smartphone, can be an object, a very engaging object. I don't know what form it would take, but in any case a very engaging object. In any case, it would be nice to be able to duplicate the same functionalities on different media.) Different media are also imagined by IC_P1: "It could be a tablet, or a smartphone, or a small robot, or something that we haven't yet imagined, a hologram or something else, I don't know, that we have trouble imagining today. This participant, on the other hand, would not like the coach to look too much like a human face: "Afterwards, what I don't like as much, because I saw it on TV and it happens in Japan, is the faces, as I see you. Moreover, he would like the coach to have cameras (IC_P1 "so afterwards I don't know if the coach will have cameras that will be able to do a supervision like an occupational therapist would because she can see the environment in which the elderly person lives but it would be great if it could be done like that, you are going to help a lot of elderly people in their daily life"). As far as the attitude of the virtual coach is concerned, the latter should have its own personality rather than being a copy of what can exist in humans (IC_P2 "I have a lot of trouble with the technology that tries to personalise or copy human behaviour too much"). Finally, the coach must be simple to use (IC_P1 "First of all, we have to make it simple, we often complicate our lives. It must be simple because retired people need simple things") and must be totally autonomous from a connection point of view thanks to a 5G key (IC_P1 "Yes, it must be completely autonomous, it must not be dependent on a WIFI").

Geriatrician

Unmet needs of older adults

The geriatrician highlighted several needs that older people may feel. The first concerns the need for **emancipation** of the older people, the fact that they should be able to make free choices without the medical profession or the family deciding for them (G_P1 "they should be considered by society as a whole and by the health and medico-social fields, as people in their own right, and therefore a need for emancipation should be respected") (G_P1 "It can sometimes be very much linked to family pressure, with children thinking that they can decide for their parents, so I think this need for emancipation is really fundamental"). In addition to this need, there is the need to have the means to **make choices and to live independently** in safety (G_P1 "which is to have the means to make choices that are as free as possible in the sense that if to be able to stay at home in complete safety, i.e. to have one's daily needs met, one is obliged to spend a monthly sum of more than 10Ke or to accept to move to an establishment such as an EHPAD or an USLD, and in the end it is not really a real choice but more a choice by default").

Thirdly, to ensure that older people have **access to prevention** throughout their lives (G_P1 "to have access to prevention in the same way as the general population, so there was always an idea of developing the power of action of older citizens").

The fourth need highlighted concerns the **reduction of the digital divide**. Currently, digital devices are used in all aspects of life, including health. It is therefore important for all people to have access to these devices. "It is important to have access to the digital tool and to what it implies behind it, i.e. there are more and more tools and we can see this at the moment with vaccination where appointments are made via digital tools, that there is a break with people who do not have access to the digital world at all and I think that this is important, with more and more services being developed for a lot of people but which can put the older ones aside because of the digital divide. "

He also mentions the need to **reduce territorial inequalities in terms of health or social conditions**, to **fight against isolation** and to offer **nutritional** advice and support. "Lastly, we have nutritional needs, which change a little bit and I think that it could be interesting to have advice and support with the idea that prevention is much more effective.

Barriers

As far as obstacles are concerned, the participant believes that this type of device is aimed at a certain part of the population. It is necessary during its development and deployment to take into account the entire older population (G_P1 "It is still something that is intended for people who have a minimum level of access to these tools, who potentially have a social and educational level that is not too bad, and so we are not necessarily addressing people who are already under the radar, and so ultimately the risk would be to forget the people who are under the radar, so to speak"). Furthermore, to avoid people feeling lost in the face of so much information and therefore not using the system, the participant thought it would be useful to prioritise interventions according to the most important needs or to propose interventions with the coach spread out over the week and compatible with their schedule (G_P1 "The other obstacle would be that some people would have the impression that there are too many things to do and therefore that they would drown in the various recommendations, and so in the end there is a bit of a "the best is the enemy of the good" proverb that unfortunately is used quite a lot, and so we should try to prioritise the interventions, always with the idea of graduation, to be able to target "the most important" first and to see if the people are more willing to take a little more time with regard to this. Or else to split the programme up into different interventions during the week").

The last obstacle reported by the participant concerns the use of the data (G_P1 "And then the other obstacle could be the slightly invasive aspect: 'you have transferred my data to such and such a person, but I don't really want to do that, I don't want it to be medicalised, I've had enough medicalisation").

Municipalities of Paris

Functionalities of the Coach

Different functionalities were mentioned by the two participants who generally share the same point of view on this subject. First, the virtual coach should help to **transmit information** to the older adults, such as timetables, names of associations, etc. (MP-P2 "So, we could imagine that the older person says "gymnastics" and all of a sudden the virtual coach says "you can go downstairs to number so, from street X, to association X, you can call them at such and such a number") and to print them out with the address, telephone number and map to direct them. To do so, the coach should rely on the territory's offer to give precise information (MP_P2 "rely on the reality of the territory's offer so that it makes sense"). The coach could be a source of proposals by suggesting **activities** (MP_P1 "What would be interesting is to make suggestions "do you know that today there is an aqua gym session at the X swimming pool". That's it, suggestions could encourage people on different things or on things they could do") or by acting as a diary (MP_P1 "It could also remind appointments, or say "you haven't seen your doctor for a month"). **Health functionalities** could also be proposed " MP_P2 " uses related to health and in particular for example that this coach could take the temperature. That this coach allows you to take your blood pressure, small gestures like that in daily life which are sometimes a little complicated") remote alarm (MP-P1 "And maybe even that the remote alarm, instead of being something that you put around your neck, on your wrist, And maybe even the tele-alarm, instead of being a thing that you put around your neck, on your wrist, that when you fall, you have to press on it,

that sometimes you don't have it on you, and that you can say a key word or several key words by voice") and dietetics (MP_P2 "That this coach allows you to take your blood pressure, small gestures like that in daily life which are sometimes a little complicated"). The coach could also enable the creation of social links (MP_P1 "there could also be contacts with people who are willing to visit them, to discuss with them"). The relationship with the human being is an important factor for the participants, and in particular MP_P1 who would like the technician to take the time to discuss with the older person when installing the virtual coach. In case of problems, a hotline should be available (MP_P1 "And with an easy hotline. That is to say, all of a sudden it doesn't work or we want to know, to ask a question, to know if we can have an additional option").

Physical characteristics of the virtual coach

The participants both imagine the shape of the coach to be rounded (MP_P1 "I see it as rounded"). MP_P2 imagines that the coach would work exclusively by voice, particularly because of the handling difficulties that older people may face (MP_P2 "That is to say, with a system for recording the person's voice and that it gives things back orally because a big obstacle to digital inclusion for older people is that as soon as you have to handle things, touch buttons, plug things in, as soon as it's too complicated, it panics and can even dissuade you. So there, since we can dream, roundness and orality"). Whereas MP_P1, believes that the virtual coach should resemble a touch screen and whose messages would be delivered in a visual way (MP_P1 "And I see it as round too but I don't know why. But I would see it, I would see it more as a thing, it could be almost a thick touch screen, tactile if necessary but it can also be a TV, you know, that exists in nurseries, for example. It's a screen where you can press buttons and which also gives you information, it says hello, it doesn't speak but it writes it. "). Furthermore, the device should be large enough for people not to forget it and be adapted to people with reduced mobility (MP_P1 "so something that can be seen and also think about people with reduced mobility or in wheelchairs, so think about the fact that you can put a wheelchair underneath, something like that. It's like a hairdresser, only smaller. A dressing table, you can lift something and it's a screen"). Finally, the design and handling must be ergonomic and easy to use to avoid any rejection.

Pension prevention organization

Functionalities of the Coach

For P_P1, it is necessary to take into consideration all the innovations made by private or public organizations. Indeed, there are currently many things created in terms of prevention, but these innovations are scattered throughout the territory and people do not know what exists, nor how to take advantage of them. "There are many things that exist, but people do not necessarily know about them and it is always difficult to combine information and direct people to the resources that could be of interest to them. The virtual coach should therefore build on what is being done and propose around the home "to have a kind of small tool that can both give you information that you can mobilize around your home". But it could also inform, suggest and communicate about daily life aids to stay healthy, for example by proposing to call them, to do physical or cognitive exercises. The coach should give "the key messages of health prevention based on physical activity, diet, sleep, meeting other people, intellectual learning". However, this requires the information to be dynamic and regularly updated, which is currently complicated for organizations to do "how to ensure that tools such as the one you are developing manage to agglomerate a maximum amount of information, and moreover information that is dynamic, evolving and should be updated, which is extremely complex for organizations to do". It is important that this virtual coach connects users with other people, with the outside world. It is

important that this virtual coach connects users with other people, with the outside world. It could thus propose activities in a mixed format, both face-to-face and remote

Attitude of the coach

The attitude of the doctor is not appreciated by the respondent. For P_01, the doctor should remain the doctor. If the virtual coach communicates medical information, it is necessary that the doctor is included in the program. However, the virtual coach could provide preventive information based on scientific data "if he gives information I would say more of a preventive nature, well-being, there must be scientific references so that we don't have the impression that it's a fake but he must not behave like a doctor". The coach could also play the role of a medical assistant associated with a medical team. Indeed, for P_01, there are "already things that are done to accompany certain chronic diseases, tools that analyze your data and then, when your data is no longer very good, send messages to both the patient and the doctor so that people remember and consider what they can do".

3.3.2 Results from the second wave of interviews

In France, we conducted interviews with 3 different stakeholder groups and interviewed 4 people in total. Stakeholders we involved:

- **Insurance company:** Two participants (FR_02 and FR_03). Both work with health insurance and on innovation projects. These are the same people we interviewed earlier.
- **Geriatrician:** One participant (FR_01). This doctor is a specialist in diseases and disorders of ageing. This is the same person interviewed previously.
- **Researcher:** One participant (FR_04). This person works for a forum on health and autonomy.

Political Factors

Only two groups of stakeholders are aware of ageing policies in France (FR_01, FR_02 and FR_03), among these policies there are : Plan "Well Aging" / "Alzheimer" Plan / Law "Adapting society to ageing" ; "Age-friendly cities" programs; Prevention of loss of autonomy / "inclusive" programs of the Conference of Funders; Recommendations and work of the HCFEA; Application of the Global Strategy on Ageing and Health, through the ICOPE program (in particular Gerontopole Toulouse); Fight against ageism (campaign via WHO report) (FR_01). But also "the ASV law and its operational variations. The next one should be, if the bill is tabled, the law on "generations in solidarity" (FR_02 and FR_03)".

These groups are also aware of the United Nations Decree on Healthy Ageing but only FR_01 knows which country is implementing it. It quotes " New Zealand, Ireland, Switzerland, Canada and Japan have such strategies".

Social Factors

Several **social policies** can support active and healthy ageing. Among these policies, we can mention: "The pay-as-you-go pension system and the Allocation de Solidarité avec la Personne âgée (ASV) allow to cover essential needs and more; Financing of housing maintenance/improvement, via the ASV law (FR_01)" but also "Prevention actions of pension schemes; 100% health, future deployment of the ICOPE tool to fight against frailty, Funders' conferences (National Solidarity Fund for Autonomy + department) "FR_02 and FR_03)".

the e-VITA virtual coach should be offered to "elderly people and children with cognitive disorders (FR_02 and FR_03)". However, for FR_01, the priority would be newly retired people, and the information should be relayed by health and old age insurance organizations and supplementary health

insurance schemes. The system is also interesting for local authorities in order to reduce the digital divide and/or medical and social deserts. Finally, careers with little exposure to new technologies could also be a target for e-VITA

Regarding the social representation of technology, there would not be any opposition to artificial intelligence (AI) but a mistrust. It is important that the discourse is oriented towards the services, the benefits of using this tool rather than the technology (FR_01; FR_02 and FR_03) "there is no real opposition to algorithms or tools based on AI when the use made of them seems to bring a direct benefit to the person (real or supposed) or easily meets an unmet need (FR_01)".

As far as virtual agents are concerned, FR_02 and FR_03 "do not have any feedback on virtual agents specific to the problem of ageing, given that what counts for this type of service is the quality of the personalized response". **Difficulties** in use arise when interfaces are perceived to be too complex, not sophisticated enough, or when uses have not been established for a long time (FR_01).

Different structures or solutions to health/health and digital culture could be involved in this project. According to FR_01, there could be the "Prescri-forme" program of the ARS Ile-de-France, which is a national strategy for sport and health; there are also the national nutrition and health programs or the gerontopoles and reference centers. For FR_02 and FR_03, there are the laboratories of tomorrow's solutions of the Caisse nationale de solidarité for autonomy, the calls for projects on ageing and disability and the France services digital advisors. Finally, for FR_04, "the creation of a regional e-health development support group for the implementation of the regional e-health strategy" could be an example.

Technological Factors

Incentives cited to support a technology for active and healthy ageing like e-VITA, could be "tax exemptions, reductions in insurance premiums (or partnerships with supplementary pension or health insurances), especially for the renewal of electronic/digital devices with incentives to recycle in recycling centres or workshops to recover components and reduce waste production. This could be included in a package with the ecological transition! (FR_01)". FR_02 and FR_03 mention other measures such as "Confrontation of funders/social action pension funds/distribution agreement with insurance players when the business model is approved". Finally, health technology development actors such as health competitiveness clusters could also be involved in promoting these technologies (FR_04)

There are currently many silver economy start-ups and/or gerontopoles trying to develop innovative solutions.

However, some startups offer solutions that are more or less innovative and, above all, more or less useful (FR_01). These startups have little scalability and no business model. They have seed funding, which may be public or private (FR_01), but no large-scale service funding (FR_02 and FR_03)

The key actors for the dissemination of the e-VITA virtual coach could be in France, the Social Security (health insurance, CNAV and future branch "dependence"); Telephone / Internet operators; Local and regional authorities, in particular the cities friendly to the elderly (FR_01); Supplementary insurance (health and / or retirement) (FR_01; FR_04); Prevention and health promotion devices such as the CODES of the INPES (FR_04). But also, the conference of funders, the Caisse nationale de solidarité for autonomy (FR_02 and FR_03) and Vivalab (FR_02 and FR_03; FR_04)

For the respondents, there is not enough funding to support the appropriation of technological skills by users, especially for FR_01 because the equipment is expensive, but also for FR_02 and FR_03, there is not enough funding for the implementation phases which would allow users to be trained. For FR_04 "the reflections on inequalities have not yet, in my opinion, led to the emergence of sufficient solutions and means.

The same goes for citizens who want to learn, it does not seem to me that there are enough resources declaring the need for accessible offers in every sense of the word. "For FR_01, it would be necessary either to pool these facilities or to finance them in part through solidarity, which would also make it possible to create "local jobs both in the ecological transition (production of decarbonized electricity), by encouraging the reduction of consumption (thanks to the energy optimization of equipment, among other things), in personal assistance (lifelong training and social and health assistance (health and medico-social sectors) ..."

Legal Factors (information from the initial interviews with the geriatrician and the insurance people)

Different barriers to the use of the e-VITA tool were reported by two groups of stakeholders. FR_01 reports social inequalities. Indeed, the tool would only be intended for a part of the population, those who have access to technological tools and leaving aside the other part of the population who might need it. It is also important to bear in mind that not everyone is comfortable with new technologies and therefore not to judge people but also to adapt the tool. There could also be inequalities of access, so it is important that the tool is available in multiple locations (FR_02 and FR_03). Another concern is that people do too much and get exhausted trying to follow all these recommendations "a feeling of too many things to do and therefore drowning in the different recommendations (FR_01)". Furthermore, the use of the tool, the implementation of prevention depends solely on the person "well I'm not in favour of helping a person if they don't want to. It is therefore important to respect the choices of each person and not to put pressure on them to use this tool.

The coach must not be invasive: "You have transferred my data to such and such a person, but I don't really want to, I don't want all this to be medicalized, I've had enough of things medicalized" (FR_01), one must be careful with the use of the data. Indeed, "You shouldn't track and then make statistics on your life" (FR_02 and FR_03) with the data collected.

Finally, for FR_02 and FR_03, it is important that the human being is always present, the development of technological tools must not supplant the human being. Finally, a major obstacle is that of large-scale development and scalability.

3.4 Germany

3.4.1 Results from the first wave of interviews

In Germany we conducted interviews with 3 different stakeholder groups and interviewed a total of 9 persons. Stakeholder that we involved:

- **IT Company** – Two participants (IT_P1 and IT_P2). Both work with health insurances and develop for them e-health software.
- **NGO on Technology Adaptation** – Six participants (participants preferred to be anonym, therefore we didn't not give them a code name). The NGO is helping older adults with the usage of technology, they explain to them how it works and organize small workshops for them.

- **NGO on women rights** – One participant (N_T1). She is leading an NGO that is organized to discuss and enforce women rights. Many of the members are older adults (Median at around 70 years).

IT Company

Functionalities of the Coach

IT_P2 saw **data security** as something important, because such a coach works with sensible data. *“Data security is an essential topic if we look at it crosswise. So, such a coach has access to most sensitive personal information of people and the property of data security is important. That such data cannot be misused, not by criminals. They know, “oh here lives the man who is somehow forgetful”. Or the one who always sleeps from eight to eight. Or the one who is not there then and there, because such data can probably also be derived from such a coach use.”* (IT_P2). Further he thought that the coach should understand the needs of the user. *“[...] that they bring real benefit to the people in their social life, in old age, that you also there somehow that the system learns what I like for things like. What I talk about. That it gives me information that I would like. Think there was quite a bit there.”* (IT_P2). IT_P1 thought it would enhance the functionalities of the coach to add additional information on the health status of one person, in order to become a companion. *“Incredibly many of the apps and helps put themselves out there and say they want to be the companion of the health insurers. So, the health companion of yes, all life phases want to look after the insurer yes, that you have then at some point an integration also. Now then, that this is a smooth transition from. [...] So that you at least have the findings, then you know that person XY has a slipped disc and therefore can no longer do anything. And that this is already there, so to speak, when you use something like this, that it is in continuous integration.”* (IT_P1). The coach should be acting on the additional health data, to make meaningful recommendations. *“[...] and that the e-VITA coach would not constantly say, in the example now spoken, every three minutes. Now we are walking around the block, when he actually has a slipped disc. That brings then nothing.”* (IT_P2)

Further, the usability must be adapted to older adults. In order to make it easy and enjoyable to use. *“And then not so complicated, I would say, because it's for older people. It has to be easy to use in terms of technology acceptance models [...]”.* (IT_P2)

Barriers

Many barriers have been seen in the context of the coach, since it is aiming to help older adults remaining healthy as long as possible. Therefore, many data are needed to understand the user. This data is often collected within the private homes of the user, which is seen as a sensitive area.

IT_P2 thinks that the integration of e-VITA into existing systems is a lot of work, might be worth considering to not implement it and have a coach that is not that smart but more secure. *“If I want to share this with such a device, then I have to make sure that it is absolutely trustworthy. Otherwise, it won't work. You can also say that. Well, then we'll do it without health data, but somehow we'll do it this way (one size fits all approach?) and say, “Well, we know that old people should move a lot,” and then the thing will ring every half hour with “Get moving,” no matter what the file says. Maybe that will help. Then only those who can move will buy it. The data issue has also been somewhat defused. [...] So, the question is, do I want to integrate this into the offers that are out there or not? And maybe you don't have to.”* (IT_P2)

Another option was seen by IT_P1 who thought that the users could integrate the data by themselves, that would give the possibility to use data without specific certification. So, users could choose what

data they would like to share with the coach and send it to it. *“That would be a blatant barrier in any case. It would have to be a medical device or something. Maybe it would be. So, you need a hook there, too. But. As IT_P2 already says, if you just leave that out, then. And then I say you start again from scratch, but then you also say that the findings or something else are not there. But we just look. We just need a little time to learn how you act at all. We don't have any data. Then you first have to start collecting the data. So, and then learn from that with the sensors. And then on a voluntary basis. I think, if you say on a voluntary basis, if you feel like it, you can enter a little bit more, then. I don't know if that has to go through Gematik [certification] or something.”* (IT_P1)

While the user can add some data, it is also important that the usage of data is transparent, in order to be trustworthy as IT_P2 mentioned. *“Yes, and that of course the use also, but then, then it must be just transparent. So, I can make these statements, if the provider of this coach assures to use these data confidentially, to give me only these services accordingly, which he promises in advance. Is it fair, if it now in the background to, I do not know, prosthesis manufacturer or wheelchair factory or somehow crutches manufacturer, according to the motto, I recognize here straight the moves no longer so much. He needs a wheelchair in the next five months. If such background mechanisms were built in to somehow commercialize this data, then I would not find that ethically correct. Unless it's transparent, so you can also say great! I want that. I know that. I want that. But it turns out, to use the word, that in this modern platform capitalism there is no consideration for the users, who are not at all aware of what they are revealing and what is being done with the data. And why should that be different here? So, it's very critical.”* (IT_P2)

Finances

The topic of finances is seen by both interview partners as something difficult. IT_P1 says that programs for prevention are something that nobody wants to pay for. *“So that's always the big question, who pays for it? When you're on the road in a preventive context. It's always difficult, because no one wants to pay for it. The insurance companies don't want to, the patients don't want to. Or the other way around, the health insurance companies might pay for it if they say it brings something. That is, if there is a benefit. But yes, it is difficult.”* (IT_P1)

IT_P2 is a bit more optimistic and sees some options of finances. In his opinion health insurances might pay, if it can be proven that it reduces risks for certain diseases and therefore save costs. He sees prevention as something helpful for the social insurance system, as it can relieve upcoming costs. *“So, I think if you can kind of say with your e-VITA Coach app, if you use that, it kind of reduces the risk of people getting sick or they just stay healthier [...]. I think you have to somehow show that it has a financial benefit, I think. I'm afraid that's the only way to do it, and I don't mean it in a negative way. Is really good. If such a preventive measure, which costs money, that so an insurance relieves, then remains more money for other achievements. So that would really be to everyone's benefit. At least in a social insurance system like this. That's why it's a good thing. So, it's positive. Then it would make sense to think about financing through such a social insurance agency. If you really create a relief and the willingness to pay is about as high as the possible relief.”* (IT_P2)

Another option that he sees is that private person could also do leasing and pay monthly fees. *“Of course, you can also, that's the other option, simply offer it on the market, like a subscription model. 20 euros a year, a month for a coach like that. Spotify-like. Or like this Peloton Bike. You can also borrow the bike, which you don't buy. Like leasing.”* (IT_P2). IT_P2 believes that the actual generation of retired people is financially well off and could pay for themselves. *“So, if that's the way the current generation of retirees is doing, they could probably afford it.”* (IT_P2)

NGO on Technology Adaptation

The questions have been asked within a workshop. The answers have been written down but not recorded, therefore we present here the results without quotes. The workshop was done with an NGO that helps older adults to use technology. They do that by having regular group meetings, individual meetings and workshops on specific topics. The workshop was with six members of the NGO. The participants are older adults themselves.

Unmet needs of older adults

On the question what needs they see with older adults, the participants of the workshop saw four main points. **Loneliness** is something that many older adults experience. Especially during the Corona pandemic and the lockdowns when the loneliness of this group increased as the communication was happening online. Online communication is not always feasible for this group as they are not always used to work with the technology needed to do so. Therefore, technology should be developed in a way that the usage is intuitive.

Another field was seen in smart home devices. This technology is increasingly becoming part of households. But smart home control can be difficult and could be more intuitive with the help of a social robot.

One clear need that all participant saw was that older adults do not want to be a burden for others. Therefore, they saw a clear chance of robotic applications within this group as it might help the users in daily challenges and potentially delay the moment that external help is needed.

Barriers

The NGO constantly engages with technology and tries to teach it to older adults. Within this role, they have experienced a lot of failed technology that was issued by barriers that could not be overcome. Concerning the e-vita coach, they saw several challenges that could become a barrier. One was the usage of the data. For the user, it must be transparent what happens with the data. If the user is uncertain about the usage, he might choose to not use it to not be exposed to risks that are difficult to calculate. Another challenge was seen in the fear of learning something new. In the experience of the NGO older adults are not always keen on learning something new. Therefore, it would be helpful if the coach is not entirely new but has elements that are already well known within this group. Another problem that the NGO has faced in their daily work is the sensitivity of touchscreens. They are not always entirely adapted to the skin of older adults and sometimes they can have problems interacting with the screen. The NGO proposed to use voice interfaces instead, to make a two-way interface (voice and touch).

The last problem that they saw was the pricing of the coach. Since the coach will be connected to social robots they are afraid that it will be costly. Not all the people they are dealing with are willing or able to afford high costs for such a coach. They saw health insurances as a solution to it. So that the health insurance pays the coach and provides it to the older adults.

Finances

As mentioned above, the NGO saw primarily health insurances as a source of financing for the coach. In Germany, 90% of the population is insured within a regulated health insurance that is self-governed and is redistributing the received money to the people in need of health services. Health insurances have a specific status as a company and are not making profits, they are part of the social system and

are financed by people receiving an income (Working; Retirement). High-paid jobs (above 60.000€ per year) and civil servants can choose if they want to participate in this insurance and mostly choose to not participate. They have another insurance system that is held by private companies. This system is not part of the social system and works under less regulation. It, therefore, allows the insurances to be more flexible and to offer a better service to its members. It represents around 10% of the population.

The NGO saw three different options on how health insurances could pay for the users:

1. The coach is part of the offer from the health insurance and the insurance offers it to anyone interested.
2. The coach is taking over the work that care workers usually do. The money that is saved by doing so could be redirected towards such a system.
3. The coach is helping people with disabilities to participate in social activities. In this case, the system could add value to the quality of life of that person and therefore become something that health insurances are willing to support.

Private insurances have an advantage in offering such a coach to its members as it is better financed and less regulated. Therefore, it could come to a situation that this is only happening for the 10% of the population that is a member of this kind of health insurance.

Another option of financing such coach was seen in leasing. Since the older adults might be reluctant to pay the full price upfront and first want to try it out. Leasing could help them to decide to try it out and to see if it fits their needs and is enjoyable.

NGO on women rights

Functionalities of the Coach

N_T1 argued that the system should be able to know about the emotions of the users and to act accordingly to it. *“Yes, so you would have to feel. That is perhaps a much too high claim. But what type I am and what answers do me good and do not upset me, because I am alone. And I would like to have simply a harmonious exchange and not an aggressive one, thus I start now from the older ladies. [...] He would have to feel how my mood is, like what I need today, what is good for my soul. (N_T1).*

Based on the knowledge that the coach has about a person it should be able to make emphatic recommendations on the behaviour of the users (e.g. recommending to not drink too much alcohol). *“Maybe he should also say to me, “You're drinking too much alcohol today, why don't you have a peppermint tea and you need to move. Go for a walk and otherwise you are very selfish today. Think about people who are not as well off as you are”. Yes, he would have to meet me empathically somehow like that. It should motivate me to deal positively with my aging. Yes, to be in a good positive mood. Yes, to bring me sunshine in the gray everyday life of old age.” (N_T1)*

Integration in Organization

On the question on how such coach could help the organization that the interviewed is leading, one idea that was developed, was that the coach could replay events that could not have been visited in person. *“So, I could imagine, we hear Professor Burkart on some university topic, but 50 ladies cannot participate because of walking difficulties, new hip, wheelchair, so. That means, if these ladies had such a coach, he would be able to present the speech to them, for example.” (N_T1).*

Another idea was that the coach should know the program of the organization and remember users of upcoming events. “[...] or that my program, what I always create for half a year, the coach on practically these, the annual planner takes over and says Ms. Schmidt, remember, tomorrow afternoon 3 p.m. HDW Mr. Richter from the University of Siegen.” (N_T1)

3.4.1 Results from the second wave of interviews

We organized a workshop with secondary stakeholders to understand how the e-vita coach could help their work and how they would interact with it. For this purpose, we talked with eight people within one workshop. The participants there working at the city of Siegen or at the Caritas (Care Organization). The results from this focus workshop showed that:

- The envisioned social platform will receive a constant connection to the e-VITA middleware, the primary end-users in each community and to the secondary stakeholders from this community. The platform will become a new possibility for the secondary stakeholders to promote or offer their activities.
- Activities such as cognitive training, physical training, education on psychological or nutrition health as well as other events from the regional secondary stakeholders will be displayed within the platform. The secondary stakeholders will have the role to input these activities to the platform and to let end-users know about the platform and its offerings. For the secondary stakeholders this social platform will become a new tool to: (1) Promote their activities. (2) Get an overview of other activities and events in the region. (3) Help older adults to know about other offers.

Further there will be trainers which will enable end-users to use the platform, these trainers could be older adults that just retired and who are looking for a new role. It is envisaged that they help other end-users which are not used to new technologies.

3.5 Japan

3.5.1 Results from the second wave of interviews

In Japan, seven specialists (4 socialists [JP01, JP02, JP04, JP05], one economist [JP07], one politician [JP03], and one technician [JP06]) answered the experts'/stakeholders' questionnaire. The subjects were asked to answer as many questions as possible, focusing on their specialty. However, blanks were accepted for questions if they couldn't answer.

Political Factors

In this factor, we got the answers from six specialists (JP01-04, JP06, and JP07). For Question P "Can we use already available data on this topic?", 5/6 subjects answered "yes". For Question P1 "Are you aware of any mainstreaming ageing policies in your country?", 6/6 subjects answered "yes". Furthermore, it should be a "declining birthrate and elderly policy" rather than just aging policies. The proportion of government bonds in the national budget continues to increase. This is due to the fact that social security expenditures (pensions, medical care, welfare, etc.) for the declining birthrate and the aging population are increasing (JP03 and JP04). 4/6 subjects knew the United Nations (UN) healthy decade of healthy ageing. Denmark, Singapore, and Japan are implementing that shift towards healthy ageing policy (JP02-JP04, and JP07). From the early period, the EU has taken the first step to implement active aging and to promote the social participation of older people (JP04). It should be mentioned that it is

difficult to make a general statement because the aging process and the burden (taxation) on the citizens differ in each country.

About the Japanese situation, five specialists (JP01-JP04, and JP07) considered the relationship between the relevant policies of other countries and those of Japanese in their experience with measures for the aging of society. JP04 mentioned Japan is a leading country in the world in terms of aging and other issues. In addition, Japan has a well-balanced universal health insurance system with medium welfare and medium burden, and the social security system is set up in detail. From his own management experience, he has had many opportunities to have discussions with people in charge of nursing care and welfare in various countries, and to think about the policies and differences between countries. Japanese long-term care insurance law was originally developed based on the benchmark of Scandinavia, a country with advanced welfare systems, but because the ageing process has been progressed faster than other countries, various measures have been taken in Japan. Today, referring to Japanese progress as a case study, many countries are developing their own domestic policies. In particular, there is no doubt that Japan is at a higher level than other countries in terms of integration with technology, and he believes that this is one of the few areas where Japan can take a leading position in the world. Furthermore, it is necessary to discuss the shortage of human resources in the nursing care sector, and to take urgent action including reform of immigration policies to introduce working population from foreign counties (JP07). Five specialists (JP02-JP04, JP06, and JP07) have many experiences in handling personal information. They felt that the manner of application of Personal Information Protection Law has become much stricter than the period when it was enacted. On the other hand, as technology continues to evolve, it becomes effective and convenient in handling information within the cloud. However, in the past, the servers were located on the provider's side, which prevented the information from being provided to a third party. However, one of the respondents suggested that with the spread of cloud computing, information in nursing homes is often provided to third parties (JP04). Although there are pros and cons, vendors are now in a position where they have access to the personal information of individual users to develop more efficient system (JP04).

Economic Factors

In this factor, we got the answers from four specialists (JP02, JP04, JP06, and JP07). Three specialists (JP02, JP04, and JP06) answered to be able to use the existing data sets. Furthermore, JP04 mentioned long-term care services are still part of economic activities, and economic indicators must be used as a reference.

Two Japanese specialists (JP04 and JP06) mentioned the cost of e-VITA's services. JP04 suggested that it is necessary to take into account whether it is covered by self-financed service or long-term care insurance. Long-term care insurance in Japan is available at a cost of 10% to 30% of the individual's cost. In addition, assuming that it is a service package using telecommunication, both the initial cost and the running cost are considered to be demanded. In this case, he believes that the model would work well with cost-sharing like subscriptions. Regardless of whether insurance is applied or not, in terms of the burden on the individual user, JP04 suggested that the cost should be designed around 10,000 to 20,000 yen/month.

Social Factors

In this factor, we got the answers from four specialists (JP01, JP02, and JP04-JP07). Social policies to support AHA are projects to prevent frail for older people and as the result of that, it will decrease Long-

term Care insurance users (JP01 and JP04-07). Regarding the law for long-term care, each local government can customize its application, adapting to the circumstance of each region (JP04).

As the target of e-VITA, it is considered to be people, such as young-old population (under 75 years) who decreases vitality or have depressive symptoms (anxiety and worry), or retiree (JP01 and JP03-07). Moreover, it had better have IT literacy to some extent (JP01).

The social resources can support the introduction of e-Vita in the daily life of older people. JP04, JP05, and JP07 suggested that the candidate to introduce it would be the area comprehensive support centers, the home care support offices, the long-term care insurance section in the municipality, the neighborhood association, welfare commissioner, and projects of Preventive Long-term Care using SNS.

Regarding the social representation of technology, especially AI and virtual agents, people especially older adults are not familiar with them, and have negative image for them (JP01, JP02, JP04, JP06, and JP07). In addition, it is difficult to use and introduce them because of the lack of IT literacy of staff participating in care for older adults (JP01, JP02, and JP04-JP07). It would be useful to introduce the class learning how to use a smartphone in the community in the e-Vita project (JP04, JP05, and JP07). The Japanese specialists (JP01, JP02, and JP05-07) suggested that lower IT literacy of users and staff would be the biggest barrier to e-VITA, based on their past study.

Technological Factors

In this factor, we got the answers from four specialists (JP02, and JP04-JP07). Advantages such as reduced total medical and long-term care insurance costs are available to support AHA technologies such as e-VITA (JP05-07).

The level of innovation in Japan is in no way inferior to the EU or USA (JP05 and JP07). Big companies develop digital technology such as sensing technology to make better life. JP02 mentioned that each company has its own power of development but it depends on whether they consider the alliance to other company.

The major barriers to the adoption of system like e-Vita are the lack of IT literacy of users and staff, and how to protect privacy and to raise the fund (JP02 and JP04-06). The key actors comprising the process to introduce it is caring manager and the leader in a community general support center and municipality (JP04 and JP05).

At educational level, there are not enough resources to support the appropriation of technological skills for the more disadvantages users or citizens willing to learn (JP02 and JP04-07). In order to provide support for them, there are many issues such as improving the treatment of researchers involved in the development (JP07).

Environmental Factor

To clarify the Environmental factor in Japan, we added the following question "Please let us know if there are any issues that we should keep in mind from the perspective of SDGs and Society 5.0." In this factor, we got the answers from three specialists (JP04, JP05, and JP07). JP04 suggested building the infrastructure in Japan at first if the e-VITA system uses 5G or 6G. Because we are not available these in all area yet. JP06 suggested that it is necessary for people to reform their consciousness not to be dependent on the public service too much.

Legal Factors

In this factor, we got the answers from four specialists (JP02, and JP04-JP07). P02, JP04, JP06, and JP7 suggested that the system of e-VITA is desirable to use a budget such as long-term care insurance or long-term care prevention instead of medical insurance. It is possible to make e-VITA one of the services provided by private companies. Even if it is a private service, it should be covered by insurance (JP04 and JP05).

As the ethical barriers when we use AI-based systems, robots, and virtual agents for AHA, JP04, JP05, and JP07 mentioned protection of personal information. Furthermore, it is necessary to consider safety because robots are accompanied by physical entities (JP06).

Those specialists have enough knowledge for international and domestic laws and their relationships in their experiences related to aging and other measures too much. JP04 suggested that the relationship with Japanese Personal Information Protection Law needs to be kept in mind. If the system will be provided as a package, it will probably be built in the cloud. In that case, personal information will be secured not by each individual but by the vendor who provides the system. Various services will be provided via that cloud, and there are complexities and difficulties in managing access rights and personal information, including confirmation of the system.

3.6 European actors and experts' interviews

In addition to the others interviews conducted in Italy, France, Germany and Japan, some experts and actors at the European level were involved through AGE Platform Europe. Two stakeholders were interviewed (EU01 is from the civil society – EU02 is from the researcher sector). They were invited to answer whenever possible and were excused if they couldn't answer the questions. The economic and legal aspects were dropped as the interviewees could not answer these questions.

Political Factors

Both interviewees are aware of available material addressing ageing policies, especially on the UNECE website (see <https://unece.org/population/ageing/mainstreaming-ageing>). EU02 says there are existing ageing strategies, however, he does not know any government working on mainstreaming ageing in their policies, where different departments are working together and ensuring a cross-sectorial approach on ageing issues.

According to EU01, there is an on-going change happening towards healthy ageing in Portugal, in Italy (such as Friuli-Venezia-Giulia), and in Spain as well. But she points out that the change is happening more at the local/regional level, rather than the national level. Something also pointed out by EU02. In theory, countries commit to international strategies, such as the UN healthy decade of healthy ageing, but EU02 says, that "If people get aware of it, this is already something". He points out the lack of public debate on healthy ageing, where other more competitive issues are debated. EU02 says "International initiatives are important and might help to get through one or two initiatives /programmes, but to see it as a heart of a national ministry strategy, I don't see it happening."

Social Factors

At the European level, some tools are available that supports active and healthy ageing. EU01 lists (i) the European Pillar of Social Rights, (ii) the work done around long-term care and the forthcoming EU Care Strategy, (iii) the strategy on health and safety at work, (iv) work done around old age income

(social inclusion/poverty and pension, including gender pension gap), (v) the European Disability Rights Strategy that offers a comprehensive strategy that covers also older people with disability and addresses issues like accessibility. EU02 also mentioned the Active Ageing Index, a monitoring tool for active and healthy ageing. However, EU02 reminds that social policy is primarily the responsibility of EU countries and stated that the EU cannot go further than recommendations. The EU can support with recommendations and encouraging mutual learning, and pass directives that can indirectly have an impact on social security for example, but can pass social policies, as it is not part of its competencies.

According to EU01 and EU02, the social resources that can support the introduction of e-VITA in the daily life of older people can be family members, carers, peers, community pharmacists, older people's councils or associations, traditional media channels (radio, printed newspapers, tv, magazines), and hospitals.

Regarding strategies at the EU level that support digital literacy and e-health, according to EU01, it is part of the EU agenda for a long time, "the European Commission is pretty active, but do not automatically think about older people. Indeed, older persons are often neither reached nor targeted by digital education initiatives. In the context of the pandemic that showed digital inclusion is more important than ever to fight loneliness and isolation and to fully participate in society, this must be changed!".

Technological Factors

At the EU level, EU01 thinks that the incentives to support technology for active and healthy ageing are mainly financial, such as funding support to develop projects or even to move from the prototype phase towards the market. EU01 suggests to look at regional funding opportunities that could support the technology.

Both EU01 and EU02 agreed on the different barriers to the adoption of system like e-VITA: (i) accessibility; (ii) affordability of the system and more broadly, the affordability of the broadband subscriptions and smartphones; (iii) the reliability of the system: "Imagine older people facing technical issues, this would discourage them to use it"; (v) replacement of human interaction with technology; (vi) ageism; (vii) lack of digital literacy; (viii) bad communication "If older people aren't explained properly the benefits they get, they might not use it".

According to EU01, there aren't enough resources at the EU level to support the appropriation of technological skills by the more disadvantaged users or citizens willing to learn "considering older people as part of the picture when developing life-long learning programmes/initiatives is not automatic. There is also probably a need to tackle ageism in the workplace when it comes to access training opportunities: making sure that whatever their age, employees are offered the possibility to be trained in these domains." According to EU02, "funding, change of mindset, change of current educational system, our current idea of work (what is paid/unpaid work), and a structural change is needed if we want to reach out to more people when it comes to technological skills. "Many inequalities are already inbuilt in our early ages, which are passed on to the older age if not fixed".

3.7 Discussion and implications

Germany

In summary the results from the interviews showed that data security is integral to the usage of such coaching system. Users are supposed to invite the devices to their home, which is already a sensitive act, additional to it they are sharing personal information with it. While older adults might tend to overtrust such devices, this trust was not shared by secondary stakeholders. The great danger in data security in such an application area is that once the trust has been broken it is almost impossible to regain it, therefore data privacy and data security are integral for the successful implementation.

Another implication for the e-vita coach are financial aspects, as of today it is unclear who would be willing to pay for such a coach. In order to make people or organizations pay it has to create a value, this could either be a value to the end-users who have an increased wellbeing by using it or it could be insurance companies who might gain healthier clients, if they use such device. This creating of value remains unclear for the time being, something that needs to be further addressed within the project in order to find a sustainable way to the usage of such systems.

Lastly the topic of usability seems crucial for the success of the project, the system needs to be intuitive and easy to use, in order to become something that has a permanent place in the households of the end-users. The NGO on technology adaption reported on barriers of such usage and reported to us that this aspect is crucial for systems that are supposed to be used daily.

France

The analysis of the interviews highlighted several points that may be useful to consider in the development of the virtual coach.

First, the stakeholders reported different needs that older people may face. But two elements came up more regularly, namely isolation/loneliness and prevention messages. The coach should therefore offer functionalities to stimulate connections with others and local communities. The virtual coach would propose prevention activities and interventions to maintain quality of life, but also assess potential difficulties and propose interventions quickly. *Thus, in terms of development, the virtual coach should offer personalized information and advice depending on the location of the person.*

However, the functions proposed would depend above all on the analysis of the person's needs. *The virtual coach should select the activities/advice that best meet the needs of the individual.*

The physical characteristics of the coach would also vary according to the needs and preferences of the individual. *The virtual coaching system should be available on several devices such as smartphones/tablets, robots, or larger objects.* At the same time, it should be easy to use and ergonomic.

Indeed, the virtual coach should not only address a part of the population that has access to the tools, it should address everyone and also include people who are "under the radar". *For this, the virtual coach must have a relatively low price or one that can be adjusted according to income and be easily accessible through contacts with local authorities.*

The personalization of the coach requires the use of data, which must be done in a benevolent manner. *The use of data by the coach and by subcontractors must be done in compliance with ethical standards.*

Finally, the human being must not be replaced by the coach, neither in his form nor in his attitude. The coach would be a relay between the person and the local authorities. *Therefore, the form of the coach should not be too close to the human being and should have its own personality. A qualified human should always be available when needed and easily reachable.*

However, there are limitations to these analyses. First of all, the French sample is small enough to have generalizable results. Secondly, the interview time was too short to be able to explore certain themes in depth.

Italy

To synthesize the trends that are common to all the interviews, a first main result highlights the role of e-Vita as coach in health/medical domain, represented as a “consultant”, “facilitator” and advanced tool for the “development of telemedicine and digital health management (i.e. eHealth)”. A second, more surprising aspect, above the social role immediately perceived as health coach or as a doctor, is the identification of its informal role. The older adult can also see it as a “friendly figure”, even in a possible perspective of attachment, or quasi-affection. It could become a “friend” connecting the older person with reality and allowing her/him to reduce social isolation from the technological world. A trusted presence, with the possibility that the robot can support older people throughout the daily life (e.g. a suggested feature of being integrated with a stair lift to be able to support older people, where they live in a house with an upper floor). Significantly, in this light, is the representation of design that could “have a face or a more human visage, but without excess”, avoiding “to look too much like a sort of big 'toy'”. Regarding a third scope, characterized by more concrete aspects of use and economic value, the potential use in NGO or associations for older adults, as assistant in health care, or even as technology enhancer for learning, is indicated, although the limited economic resources give a possible limitation, since it is a mainly volunteer context. Therefore, financing or repayment options primarily involve public resources (e.g. a system of refunds, bonuses, tax incentives etc.) with ways to reimburse or incentivize by the public (health) system, in consideration that the cost of such an advanced technology would be relatively high for the private purchaser. In conclusion, all experts interviewed emphasize the centrality of e-VITA, as the “heart of the home”, hopefully capable of integrating all technological and digital ambient-assistant living or home automation devices.

Japan

In the summary the results from the interviews, it indicated that IT literacy of an end-user and staff participating in care for older adults is the main point whether this system will be useful or not. Their skill is more less of than we imagined beforehand. Furthermore, it is necessary building the infrastructure in Japan at first because Wi-Fi, G5 or G6 are not available in all end-user's home yet.

The data security is integral to the usage of such coaching system. As technology continues to evolve, it becomes effective and convenient in handling information within the cloud. However, end-users especially older people have a negative attitude to manage their personal information within the cloud. We have to pay close attention to take protection of personal information, and explain it for end-users.

Regarding the cost of e-vita system, the system is desirable to use a budget such as long-term care insurance or long-term care prevention instead of medical insurance. It is possible to make the system one of the services provided by private companies. At least, the burden on user of e-VITA whether insurance or not should be designed around 10,000 to 20,000 yen/month for wide spreading this system.

Europe

From a European perspective, ageing strategies and tools exist, but as pointed out by the interviewees, as far as they know, mainstreaming ageing across policies is not yet happening at the EU level. The European Union developed and made available funding schemes, monitoring tools, encourages exchange of good practices for active and healthy ageing, but because social and health policies are out of the remit of its competences, only EU Member States are able to legislate or provide support for a system such as e-VITA. Some EU Member States are implementing the change towards healthy ageing (e.g. Portugal, Spain, Italy), but it seems that the changes are happening at the local or regional level. In the case of e-VITA, efforts to find structural support could maybe be focused at the local or regional levels, rather than the national level. The national level however could be solicited to address the topic of healthy ageing and solutions to support healthy ageing, and thus generate or increase the interest of the general public about it. For the sake of the project sustainability, partners will have to understand the competences of each level of decision (EU, national, regional, local) and the different EU funding schemes that could support the e-VITA solution (e.g. European Social Funds Plus). Once clarified how it can be supported by the decision-making levels, several channels can support its spreading: family members, carers, peers, community pharmacists, older people's councils or associations, traditional media channels (radio, printed newspapers, tv, magazines), and hospitals. Finally, as mentioned by the other countries, the following barriers will need to be considered when developing the e-VITA solution: (i) accessibility; (ii) affordability of the system and more broadly, the affordability of the broadband subscriptions and smartphones; (iii) the reliability of the system; (v) replacement of human interaction with technology; (vi) ageism; (vii) lack of digital literacy; (viii) bad communication.

4. Conclusion

The work conducted for this document represents a first attempt to identify opportunities and barriers for the future of the e-VITA system, by collecting insights from the stakeholder's point of view. As the system is still not available as integrated solution, the attitude toward e-VITA and viable solutions to the system adoption have been investigated.

From the analysis of the results of the socio-economic survey, the greater challenge for the project may rely on the harmonization of the different technological and digital capabilities of the older people, in all the countries. In particular, to favor the use and acceptance of the system, it seems necessary to support the digital competences of the older people, by providing a dedicated training in case of needs.

The main barriers in applying technologies to older people and caregivers, in fact, originate from psychological factors, especially the perception of quality of life, prejudices, habits and education. Many elderly people are very attached to their memories and their previous lifestyle and so strongly reject anything that could ask them to change their life or habits. Often these people are not aware of the possibility that they could have an improved quality of life. According to this negative view, technology is an element that could interfere with real habits and could require changes in their lifestyle and so technological solutions are considered invasive and troubling. The consequence is that people remain wary of technology, and they do not understand the real benefits that these devices can give them.

The way to overcome such problems is to spread knowledge among end users about the benefits that technology and services can provide. For this reason, a dedicated training should not only be focused on understanding how to use the e-Vita system and components, but it should be able to provide a higher knowledge on how technology shape the society and on the primary role of the final user in determine the success of any technology. In order terms, the training should be focused on make the participant a more technologically and digitally literate user, not only a consumer. In this way, technology will not be seen or intended as a burden, but as an empowering solution, and its introduction in the daily life can be facilitated.

When faced with new technologies, moreover, older people can find themselves in a relatively weak position. Often such tools are so complex that people prefer not to use them. Moreover, commonly limitations make new technologies difficult to use. For example, the lack of experience and knowledge on how to use ICT devices, the cognitive differences and age-related decline, such as vision decline, hearing loss, motor skill diminishment, and cognitive effects such as trouble remembering names, trouble remembering the flow of a conversation, an increased tendency to misplace things.

For this reason, a design approach based on the analysis and the direct involvement of users in identifying their requirements that need to be satisfied is fundamental in order to develop technological solutions and services that really are perceived as useful by the end users and are accepted by them.

This positive approach to technology should involve also family members and carers from the micro-systems around the person, as principal mediators of technology. The involvement of the relevant key persons for the older people is important especially in case of concerns in relation to technology, as for example about security and data use, not only to favor the usability of the solutions, that should be

designed to recall a positive coach, avoiding paternalistic or too neutral approach. However, the personalization of the solution should be addressed in depth at personal level, with the user, as only partially mediated by the social and political factors. In this way, it can be seen that the greater challenge for the solution like e-Vita may be represented by assuring flexibility and modularity, by combining country-specific requests, personal goals and preferences of the users and deployability of the system in different contexts.

Finally, the European and Japanese stakeholders have highlighted the problem of the partial broadband coverage in various geographical areas as a major barrier to the technology adoption, especially for people that lives in rural areas, far from a town or city, that often do not make good use of all public services. In particular, the older people may run the risk of being excluded from the use of system like e-Vita. To deal with this, it is fundamental a strict cooperation with community key persons in order to reach the hard-to-reach groups of older people, that may benefit the most from the e-Vita solutions and that need to be represented inside the project.

This initial investigation will open up to a deep and more extensive online Survey, to be conducted as future deliverable of the WP9, to collect the feedback of the stakeholders on the developed prototype of the system. The knowledge gained through this first deliverable will inform the market and business analysis, as well as WP6 by giving relevant insights for the design of the system, to be deployed in different contexts of use.

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Annexes

Statistical Data

Table 101. Effect sizes of the chi-square tests for Germany, France, Italy (Cramer's V)

Variable	Germany	France	Italy
Gender	.104*	.148*	.122*
Education	.375*	.386*	.446*
Social Activities same age	.216*	.171*	.266*
Relationship status	.335*	.324*	.302*
Satisfaction with health	.157*	.143*	.171*
Migration background	.121*	.018	.019
*Pearsons Chi-Square ($p < .001$)			

Table 112. Effect sizes of the Mann-Whitney U tests for Germany, France, Italy (r)

Variable	Germany	France	Italy
Age	0,339*	0,286*	0,430*
Number of children	0,136*	0,149*	0,110*
Number of grandchildren	0,030	0,145*	0,236*
Happiness	0,121*	0,120*	0,215*
Most people can be trusted	0,148*	0,136*	0,213*
Life satisfaction	0,176*	0,122*	0,198*
Religious	0,021	0,180*	0,281*
*Mann-Whitney U ($p < .001$)			

Table 123 Mann-Whitney U Test, Ranks (SPSS Output), Italy

Ranks^a				
	Internet use, dichotomised	N	Mean Rank	Sum of Ranks
How satisfied with life as a whole	Onliner	577	843,81	486876,00
	Offliner	901	672,70	606105,00
	Total	1478		
How happy are you	Onliner	581	858,41	498737,00
	Offliner	907	671,53	609079,00
	Total	1488		
Age of respondent, calculated	Onliner	582	515,04	299751,50
	Offliner	911	895,19	815519,50
	Total	1493		
Number of children ever given birth to/ fathered	Onliner	474	594,76	281915,00
	Offliner	814	673,47	548201,00
	Total	1288		
Number of grandchildren	Onliner	459	508,37	233342,50
	Offliner	772	679,99	524953,50
	Total	1231		
How religious are you	Onliner	580	594,47	344794,50
	Offliner	907	839,62	761533,50
	Total	1487		
Most people can be trusted or you can't be too careful	Onliner	579	856,06	495658,50
	Offliner	905	669,85	606211,50
	Total	1484		

a. cntry_id = IT

Table 134 Mann-Whitney U Test, Test Statistics (SPSS Output), Italy

Test Statistics ^{a,b}							
	How satisfied with life as a whole	How happy are you	Age of respondent, calculated	Number of children ever given birth to/ fathered	Number of grandchildren	How religious are you	Most people can be trusted or you can't be too careful
Mann-Whitney U	199754,000	197301,000	130098,500	169340,000	127772,500	176304,500	196246,500
Wilcoxon W	606105,000	609079,000	299751,500	281915,000	233342,500	344794,500	606211,500
Z	-7,648	-8,321	-16,634	-3,953	-8,314	-10,853	-8,233
Asymp. Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001

a. cntry_id = IT

b. Grouping Variable: Internet use, dichotomised

Table 145 Mann-Whitney U Test, Ranks (SPSS Output), France

Ranks^a				
	Internet use, dichotomised	N	Mean Rank	Sum of Ranks
How satisfied with life as a whole	Onliner	794	702,09	557455,50
	Offliner	532	605,91	322345,50
	Total	1326		
How happy are you	Onliner	791	701,73	555070,00
	Offliner	537	609,66	327386,00
	Total	1328		
Age of respondent, calculated	Onliner	798	578,84	461916,00
	Offliner	541	804,46	435214,00
	Total	1339		
Number of children ever given birth to/ fathered	Onliner	742	568,30	421680,50
	Offliner	473	670,27	317039,50
	Total	1215		
Number of grandchildren	Onliner	738	559,81	413142,00
	Offliner	459	662,01	303861,00
	Total	1197		
How religious are you	Onliner	785	600,97	471765,00
	Offliner	527	739,21	389563,00
	Total	1312		
Most people can be trusted or you can't be too careful	Onliner	797	712,21	567634,50
	Offliner	541	606,57	328156,50
	Total	1338		

a. cntry_id = FR

Table 156 Mann-Whitney U Test, Test Statistics (SPSS Output), France

Test Statistics ^{a,b}							
	How satisfied with life as a whole	How happy are you	Age of respondent, calculated	Number of children ever given birth to/ fathered	Number of grandchildren	How religious are you	Most people can be trusted or you can't be too careful
Mann-Whitney U	180567,500	182933,000	143115,000	146027,500	140451,000	163260,000	181545,500
Wilcoxon W	322345,500	327386,000	461916,000	421680,500	413142,000	471765,000	328156,500
Z	-4,540	-4,381	-10,490	-5,217	-5,022	-6,531	-5,009
Asymp. Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001

a. cntry_id = FR

b. Grouping Variable: Internet use, dichotomised

Table 167 Mann-Whitney U Test, Ranks (SPSS Output), Germany

Ranks^a				
	Internet use, dichotomised	N	Mean Rank	Sum of Ranks
How satisfied with life as a whole	Onliner	985	933,49	919483,00
	Offliner	733	760,08	557138,00
	Total	1718		
How happy are you	Onliner	985	914,96	901238,50
	Offliner	741	795,09	589162,50
	Total	1726		
Age of respondent, calculated	Onliner	985	719,11	708318,50
	Offliner	748	1061,75	794192,50
	Total	1733		
Number of children ever given birth to/ fathered	Onliner	829	691,86	573554,50
	Offliner	651	802,44	522385,50
	Total	1480		
Number of grandchildren	Onliner	820	718,28	588987,50
	Offliner	638	743,92	474623,50
	Total	1458		
How religious are you	Onliner	977	853,80	834167,00
	Offliner	748	875,01	654508,00
	Total	1725		
Most people can be trusted or you can't be too careful	Onliner	985	930,97	917002,00
	Offliner	748	782,77	585509,00
	Total	1733		

a. cntry_id = DE

Table 178 Mann-Whitney U Test, Test Statistics (SPSS Output), Germany

Test Statistics ^{a,b}							
	How satisfied with life as a whole	How happy are you	Age of respondent, calculated	Number of children ever given birth to/ fathered	Number of grandchildren	How religious are you	Most people can be trusted or you can't be too careful
Mann-Whitney U	288127,000	314251,500	222713,500	229519,500	252377,500	356414,000	305383,000
Wilcoxon W	557138,000	589162,500	708318,500	573554,500	588987,500	834167,000	585509,000
Z	-7,335	-5,054	-14,140	-5,244	-1,172	-,884	-6,169
Asymp. Sig. (2-tailed)	<,001	<,001	<,001	<,001	,241	,376	<,001

a. cntry_id = DE

b. Grouping Variable: Internet use, dichotomised