



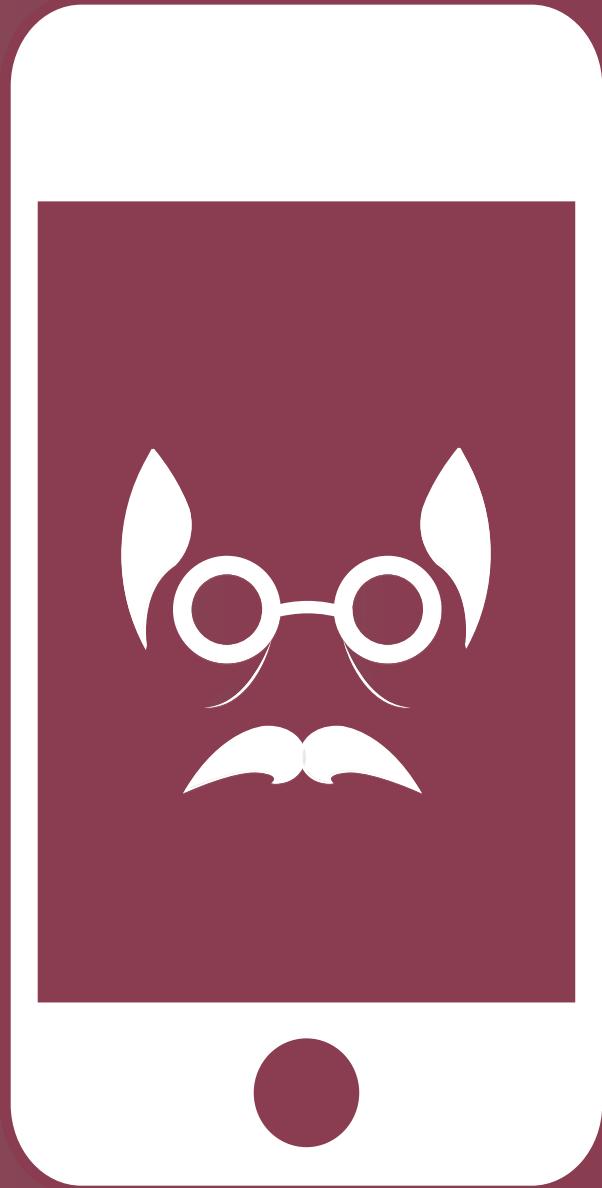
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Interface design for retired tourist, to
improve their experiences in the country
of travel.

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INTERFACE DESIGN FOR RETIRED TOURIST, TO
IMPROVE THEIR EXPERIENCES IN THE COUNTRY
OF TRAVEL



Master Thesis for Student Ángel Moisés Calero Andrés

Interface design for retired tourist, to improve their experiences in the country of travel.

Retired people in 1st world countries of Europe, such as Norway, Sweden, Denmark, Germany and the Netherlands are currently enjoying good retirement benefits. One way to make use of these benefits is to travel. However, when traveling to other countries, these elderly are looking for measures and facilities, which provide them with a pleasant experience in terms of convenience and safety.

The aim of this project is to get a better understanding of attitudes and behaviors of elderly, when traveling as tourist, as well as to understand what services are available, and how these services can be improved and customized towards traveling for retired people.

The expected design solution is an interface, which aims to a pleasant and seamless experience for retired travelers, when accessing services in the country of travel.

This research includes:

- ▲ review of existing studies
- ▲ consumer survey
- ▲ interface design

The thesis is made according to the "Guidelines for Master's Thesis in Industrial Design".

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1 Introduction

The main aim of this project, “Interface design for tourist retired, to improve their experiences in the country of travel”, is based on a study, guided by different disciplines, approach to design a device to help a specific group of people, in this case elderly tourists.

The topic has been chosen, because older people are becoming in a potential group of customers that have an active role, in the society, such as, becoming in one of the most important customers for the tourism. Moreover, those people are developing a special interest for the use of new technologies, which, to date, have been inaccessible for them.

Firstly, it pays a special attention to the psychological, and social factors influencing elderly, to get a better understanding of attitudes and behaviors of this sector, when they travel as a tourist, as well as to understand what services are available, and how these services can be improved and customized towards traveling for retired people.

Moreover, to understand the context of this research, it is also necessary to discuss the tourism's role whithin the society, i.e., the relationship, between this sector and the elderly.

However, an equally important aim is how new technologies can affect the developing of their lives, or in this context, how users can find tools which to provide them with a pleasant experience in terms of convenience and safety.

Therefore, the structure to the project is organised, three concepts: elderly, tourism and service innovation.

Subsequently, it's studied the relation between those points, elderly-tourism, elderly- new technologies, and tourism- new technologies, since, the key to get the goal of the project, is these three concepts (*figure 1*).

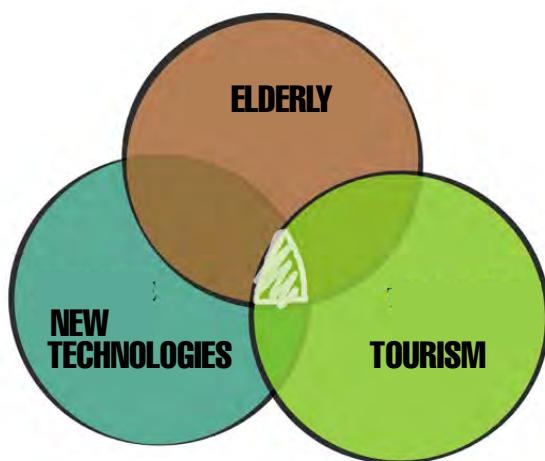


Figure 1. Relation between elderly, service design and tourism.

1.1 Motivation

Currently, companies are constantly faced with economic, social, technological and demographic changes. That fact transforms the environment in which they work, concretely the statistical environment. Population aging has been a challenge for these organizations, having to adjust the supply of products and services to the specific needs of this large segment of the population, incorporating accessibility and universal design (Fernandez, 2012).

Elderly represents for these companies a very attractive market segment in the tourism industry, highlighting its enormous growth potential (Martin, L and Guido, K., 1997, Brewer et al., 1995).

Consequently, the tourism industry needs to design strategies in order to increase their competitiveness through the use of added values that positively affect the tourist experience and attracting new market segments likely to consume those destinations different from the rest.

2 Elderly

The second chapter of the project proceeds to examine the features of older people as a future customer. Why they have been chosen, as one of the keys of the research, instead of other groups of population.

The motivation of this project is to design an interface focused for a specific sector of the population, the elderly. But, why should we design for the elderly instead of other sectors that have a closer relationship with new technologies? Is it the elderly a potential customer for companies, in particular, for tourism enterprises. To try to answer these questions first, we start doing a generalized study about elderly.

As mentioned above Elderly is one of the pillars, the development of this project. Elderly can be defined as the last stage of life of human beings, covering a significant and indeterminate amount of years, which can differentiate two periods: the first one from about 55 to age 75 and the second one from 75-year onwards (Wallingre, 1997). The initial group is closer to adulthood, the other one more marked by the aging (Bunge, B.1991).

Furthermore, the W.H.O. (World Health Organization) considers aged, the person who living alone has more than 65 years and experienced some biological, psychological and sociological deterioration, using certain.

Generally, elderly has always been ignored by society and the market as well, due to stereotypes related with that stage age, as: old age, illness, inactivity, hospitals, etc.

Currently, is occurring, especially in advanced economies, a set of vital demographic changes, including the aging population. It is worth pointing out that in the European Union, are 30 of the world's oldest countries (*table 1*).

Countries with higher aging (2000 - 2050)										
	Population 65 and over				Population 80 and over					
	2000		2050		2010		2150			
	Numbers (thousands)	%	Numbers (thousands)	%	Numbers (thousands)	%	Numbers (thousands)	%		
Italy	10525	18,2	18090	35,5	United Kingdom	2390	4,1	5885	8,8	
Japan	21862	17,2	40269	35,9	Italy	2309	4	7756	15,2	
Spain	6797	16,7	14504	34,1	France	2341	3,9	6863	10,9	
Germany	13483	16,3	22376	28,4	Japan	4812	3,8	17159	15,3	
France	9669	16,4	17114	27,1	Germany	2859	3,5	9585	12,2	
United Kingdom	9306	15,9	15558	23,2	Spain	1413	3,5	5213	12,3	
Ukraine	6863	14	7689	29,1	U.S.	9138	3,2	28725	7,3	
Russia	18081	12,3	25747	23	Ukraine	1107	2,3	2075	7,9	
U.S.	35078	12,3	81547	20,6	Russia	2935	2	6588	5,9	
China	87228	6,8	329103	23,6	Brasil	1624	0,9	138989	5,5	
Vietnam	4251	5,4	21712	18,6	China	11373	0,9	100551	7,2	
Brasil	9471	5,4	48693	19,2	Mexico	84	0,9	8002	5,8	

Indonesia	10236	4,9	49670	17,4	Vietnam	671	0,9	5082
India	50054	4,9	236513	14,8	India	6761	0,7	52915
Mexico	4759	4,8	29371	21,1	Egypt	320	0,5	3077
Egypt	3027	4,5	16727	13,3	Indonesia	1092	0,5	9492
Pakistan	5261	3,7	31119	10,2	Pakistan	652	0,5	5651
Bangladesh	4370	3,4	28240	11,6	Bangladesh	479	0,4	4595
Nigeria	3495	3	14726	5,7	Nigeria	359	0,3	1910

Table 1. Population and social conditions. Average population by sex and five-year age groups. 2006. Eurostat.

According to research made by the ONU in the Second World Assembly on Aging, held in Madrid in 2002, in 2050 over 21% of the world population is going to exceed the age of 60 (*table 2*),(*figure 2*).

Population 65 and over in the E.U. (2006)			
Country	total population (thousands)	Population 65 and over (thousands)	Population 60 and over (%)
EU-27	494.052	83.229	16,8%
Germany	82.376	16.085	19,5%
Austria	8.282	1.382	16,7%
Belgium	10.548	1.810	17,2%
Bulgaria	7.699	1.327	17,2%
Cyprus	773	94	12,2%
Denmark	5.437	829	15,2%
Slovakia	5.391	636	11,8%
Slovenia	2.007	316	15,8%
Spain	44.116	7.358	16,7%
Estonia	1.344	227	16,9%
Finland	5.266	855	16,2%
France	63.195	10.250	16,2%
Greece	11.148	2.067	18,5%
Hungary	10.071	1.598	15,9%
Ireland	4.262	473	11,1%
Italy	58.941	11.683	19,8%
Latvia	2.288	388	16,9%
Lithuania	3.394	525	15,5%
Luxembourg	473	66	14,1%
Malta	406	56	13,7%
Netherlands	16.346	2.349	14,4%
Poland	38.141	5.096	13,4%
Portugal	10.584	1.819	17,2%
United Kingdom	60.623	9.697	16,0%

Czech Republic	10.269	1.469	14,3%
Romania	21.588	3.201	14,8%
Sweden	9.081	1.573	17,3%

Table 2 Population and social conditions. Average population by sex and five-year age groups. 2006. Eurostat.



Figure 2. Population and social conditions. Average population by sex and five-year age groups. 2006.Eurostat.

This is due to the increase in life expectancy (between 1960 and 1995 the average life expectancy increased by about eight years for both men and women) and the lower birth.

This aging population has had and will have in the future an obvious impact upon the supply of products and services.

Then, how is it possible that a so wide sector of population can be ignored? , they only not belong to our social culture, what is more, ignoring this sector of the population means losing about 2,000 million future customers, and the idea of choosing elderly as a customer is one of the keys to this study.

Similarly, regarding the economy, there is an increase in the consumption of this population. This increase was mainly because of higher pension and benefits aimed at elderly.

Despite the reduction in net earnings after retirement, according to data issued in 2008 by the Ministry of Industry, Tourism and Trade of Spain, 85.4% of elderly have their own housing, and an 80% of them free of financial costs, meanwhile households supported by people aged under 65 years are liberated of mortgages only by 60%. That is, there is a population sector, who is the 21% of the world population, with the economic resources necessary to become potential customers.

A stage that characterizes the elderly is the stage of retirement, which is a radical change over the life to the person, due to the replacement of working time for leisure. Then, How do they spend that time?

It is impossible to know the exact answer to this question, but if we had to choose a generalized response would be leisure time.

The activities carried out by elderly in that leisure time are numerous, being conditioned by factors such as the economy, health, ability to move, and so on. According to Kalish (1983), some of the most popular activities to occupy their free time in old age are gardening, reading, watching TV, watching sporting events, social activities and travel.

Given conveniently Kalish's claim, we believe that tourism is one of the favorite activities for seniors, which is an advantage in the development of our project.

Seniors, seeks to find in the leisure-tourist trip, not only the possibility to travel but to get a satisfactory experience in their physical, mental and social welfare, providing them greater enrichment.

Older people represent an attractive market segment for the tourism industry, standing out his huge growth potential (Martin, L and Guido, K., 1997, Brewer et al. 1995), especially in a society like ours, more and more leisure-oriented (Goytia, 1998).

Elderly segment, is increasingly important because of his volume, available time, readiness to travel in any season (which prevents seasonality of tourism) and the growth of purchasing power (Garau, 1998).

Moreover, should be laid on the importance of the worldwide interest in offering from administrations and tourism companies "quality in the tourism experiences" as the paper "The Charter of Recife on Tourism old people, 1996." It recognizes.

Therefore, elderly has become in a source of income developing for different market sectors, particularly the tourism, since it not only provides a mean of distraction for this population, but it avoids the seasonality of tourism, and they can travel at any time of the year.

3 Tourism

The general discussion of the third chapter allows to know different elements related to the concept of Tourism, such as, the tourism system, tourists and their behavior. Moreover, to concentrate on the customer, this chapter includes specific information about Norwegian tourists, as well as, the tourism for all.

The second key to the project development is the tourism.

However, tourism is a too wide concept that has evolved over the years, so at this point we wonder: Which are the tourism issues that concerns us?

Tourism as a concept, has been studied from different perspectives and disciplines due to the complexity.

One of the first definitions of tourism was given in 1942 by professors University of Bern, W. Hunziker and K. Krapf.

These authors defined tourism as “the set of phenomena and relationship’s consequence of the travel and stay of non-residents, as long as they are not tied to a permanent residence or a gainful activity” (Hunziker et Krapf, 1942).

Several years later, tourism was defined as “a short and temporary movement of people to destinations outside the place of residence and work, and the activities done during their stay in those destinations” (Burkart and Medlik, 1981).

On the other hand, Mathieson and Wall, used a very similar definition to the above one although with some changes: “Tourism is the temporary movement of people, for periods less than one year, to destinations outside the place of residence and work, the activities done during the stay and the facilities created to meet the tourists needs” (Mathieson and Wall, 1982).

For our work, we take as a reference, the definition has been adopted by the WTO (1994):

“Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for a period of more than one consecutive year for leisure, business and other.”

Of all the definitions given above include common elements as:

- Tourism implies a physical movement of tourists outside their place of residence.
- The stay at the destination is not permanent, but it develops over a short period of time.
- Tourism concept, includes the trip and activities in the destination whose products and services are designed to satisfy tourists.

After knowing the meaning of tourism, we are going to explain the importance of this concept for the project.

3.2. Tourism's importance

Tourism is an essential factor in the cultural, social and economic development in the most countries around the world. According to the WTO (World Tourism Organization), in 2011, only in the UE were obtained revenues of approximately 333.000 million € (taking into account only international tourism). Thanks to this, we can imagine the importance of tourism for the economy of our country, and even despite the crisis period which we are living, particularly in the UE, it is possible to get that amount of income, What will happen to our society, when it gets over the crisis stage?

To understand how tourism works as a service, we must know certain pre-conceptions.

According to A. Sancho (2006) it exposes some positive aspects generated by tourism:

- Tourism contributes to ensure the balance of payments (refers to spending by international visitors in a country and spending by nationals of that country abroad.)
- Tourism contributes to the gross national product (GNP)
- Tourism contributes to job creation
- Tourism as an engine of business (due to the different connections with other sectors of the economy).
- Tourism contributes to income increment (since tourism represents an economic for the economic improvement in the standard of living of the resident population).

Therefore, the tourism industry should point out specific strategies, which allow to growth themselves, diversifying and increasing their competitiveness through added values that positively affect the tourist experience and capturing new market segments that can consume those destinations different from the rest.

3.3. The tourism system

Tourism is characterized by a set of internal variables. According to A. Sancho there are four basic elements to define the tourist:

1. Demand: composed by consumers and travel services.
2. The offer: consisting of the set of products, services and organizations involved through the tourist experience.
3. The geographical space: union among the concepts of supply and demand, including the resident population, which is not a tourist element, but is a big influence in the tourism development.

4. Market operators: formed by various companies and organizations (such as travel agencies, transportation companies, etc.) that simplify the cohesion between supply and demand.

As mentioned above older people are considered an important element for the tourism activity development.

Since our project, is not only based on tourism, it is not considered necessary to go deeper into this discipline. However, we are going to emphasize on the demand concept, because we need to know in detail the prospective client, the tourist.

3.4. The tourist

As mentioned above, the tourism is composed by the participation of several services whose main goal is addressing the tourists needs.

As well as the concept of tourism, there are different definitions of tourist.

The latter definition accepted by the WTO provides that: "A tourist is a person who moves from his usual place of residence to, other for a period higher than 24 hours and less than a year and without taking part into the academic and work system of the destination"

Different lifestyles and individual features of people attitudes, perceptions, personality, experience and motivations allow to differentiate various types of tourists. According to Cohen (1974) exist four groups:

1. The organized mass tourist: they have a little contact with the culture of the destination, so seeks to keep their usual environment in the holiday destination. We consider the elderly in this group because, in many cases, they travel in organized groups, managed by travel agencies, such as the *Imcreso* (Spain).
2. Individual mass tourists: similar to above, however, they have more flexibility in their decisions.
3. The Browser: they organize their trip by themselves, leaving the usual environment, but occasionally return to it.
4. The impulsive: they do not have connections with the tourism industry, totally abandoning their environment in order to enter in contact with the cultures they visit.

Is interesting to know the different types of tourist, however, it should be further developed and deepened, for that reason, we discuss about tourist behavior.

3.5. tourist behavior

Knowing briefly, what is a tourist and which are their main features, the next step is to study their behavior as consumers. Which elements motivate a per-

son to become a tourist? Which are the factors that influence to people to choose one destination or another one?

Consumer behavior becomes in a subject about research in the sixties, due to the progress of studies the behavior and the need for scientific analysis in this area.

Since then, there have been many different studies in this discipline, as for example: Linking consumer behavior to marketing (Howard, 1993), explicative models of purchasing decisions (Callejo, 1994), studies with quantitative techniques (Delgado, 1986) and research projects and official newspapers (National Consumer Institute, 1995).

Recently it has investigated the consumer behavior from a sectorial perspective: consumer behavior in the tourism sector (De Borja, Bosch and Casanova, 2002; Fernandez, 2009), in the toilet (Priego, 2006) or horticultural (Arcas and Hernandez, 2006), As well as studies about what kind of factors influence purchasing decisions (Fraj, Bravo and Barles, 2006).

It is common to differentiate these internal and external factors. Internal factors refer to the consumer's own variables (attitudes, personality and values), whereas that external factors relate to contextual elements (social groups, culture and economic situation).

Internal Determinants of tourist buying behavior

One of the internal factors that has been investigated in the search for the determinants of consumer behavior refers to attitudes (Frag, Large and Martínez, 2002; Sanzo, Iglesias and Vázquez, 2002).

Attitudes offer to oppose mentalities; that is, the acceptance or rejection, to a tourist destination, activities, etc.

These attitudes - positive or negative – have their origins in the own tourist experiences.

Linked to the attitudes that tourists have to destinations, is an area of psychology, known as environmental psychology. That are studying how the tourist perceives an experience foreign environments. Ittleson et al. (1976) established five different modes of environmental experience in tourism

- External: Nature and the environmental surroundings are viewed as being separate from the tourist.
- Setting for action: The environment features provide a background for the pursuit of activity.
- Social system: The environment provides a setting for bonding and types of social interaction. The tourist experience may be subsequently centred upon the development of relationships with family and friends in different environments from home.
- Emotional territory: Tourist may have emotional attachments to certain places or types of environments. These may be associated with places they visited as a child or have visited with friends and family.

- Self: The environment, and oneself are “inseparable.” It has, in essence, become a part of one’s personal identity.

Therefore, it is essential to provide a service that meets the expectations and needs, that is, designing tourism products as well as promotions, communication and persuasion programs to cause the adoption of positive attitudes by tourists, or the sign change regarding negative.

Furthermore, Tybout and Artz (1994) and Jacoby, Johar, and Morrin (1998) investigated the influence of attention, beliefs, attributions, perception and learning about the behavior of consumers.

Initially, attention is the process whereby tourist selects an external stimulus (quality of service, prices) and focusing on and focusing on them unconsciously.

Regarding beliefs is important to highlight that, are shared by other tourists belonging to the same segment, are stable and are assimilated in the identical way as attitudes. The importance of understanding the client’s beliefs is the possibility of confirming or change these beliefs as we need.

Married and More (2001) investigated the influence of causal attributions in tourist behavior. There are two types of attributes:

- Internal: Internal: it is usually in active tourist, that is mean, people who make their own decisions, regarding the trip.
- External: Tourists who prefer others decide and organize everything for them, especially when there are some problems.

The perception is one of the most influential factors in the tourist behavior and as happens with the attention phenomenon, consumers don’t have identical interpretation processes of commercial information they receive.

Therefore; the goal of business is to collect the useful information about the “common perceptions map” from the “type” segment of tourists. Such perceptions are associated with the image of the tourism brand, the product, the establishment, the value, etc.

There are other internal factors, that also influence over the consumer behavior, such as, motivation or personality. As for motivation (internal and external) consumers can purchase tourism products by various reasons, such as social recognition, personal satisfaction, etc. (Berne, Múgica and Rivera, 2005; Berné, Múgica and Yague, 2001; Berné et al, 2008).

Finally, it’s worth pointing out tourist personality because it also influences buying behavior, characterizing the subject depending on a determined behavior

External Determinants of tourist buying behavior

Once it has been commented the internal factors of the tourist, then it's going to talk about the existence of the external factors that it can also influence over the customers purchasing decisions and behavior, as well.

One of the first to highlight variables according to Rondán (2004), is the impact of price's policies, which is a fundamental variable marketing. Therefore, in the case of tourism, one of the main aims for marketers is to know in which level, the price of a tourism product is considered overpriced and under which the tourists think the product is bad.

Another tool used by marketers are promotions aimed at selling high quantities of products in a short period of time.

Researchers as Bull, Martínez and Montaner (2007) have analysed the impact of promotions on consumer behavior. In the case of tourism include some conclusions as that in times of crisis - such as today -tourists distrust promotions.

Another point of research (Iglesias, Vazquez and Del Rio, 2000), has been the influence of the brand on the consumer product, obtaining conclusions like: brands are the best way to identify tourism products and services. Furthermore, it is a key to winning the loyalty and fidelity of customers.

The personal environment, that's mean, the group of people around the subject, it affects on that person, directly or indirectly. Burnkrant and Cousineau (1975) reported the most important membership group is the family.

In the case of the elderly, we believe that this is one of the most influential factor, since older people suppose for us, a public, who works and makes decisions based on experience and reflection. They don't act impulsively. Accordingly, the opinion and the real stories from the people around them will represent a reliable information source.

Another aspect regarding to the personal influences, is the influence of the roles adopted by two people belongs the tourist personal environment: the opinion leader and the prescriber. The first one refers to a person known by the tourists (a friend) or not (a celebrity), which ideals are imitated. The second one represents all professionals who are able to provide technical advice on the benefits of the product and its acquisition.

Culture and lifestyles as another target of study (Moor, 1999), obtaining the conclusion that: "travel" is a cultural phenomenon - tourism-, which has a social and cultural pressure to travel more and more.

The last external factor to note is advertising, which is widely recognized that it constitutes one of the most used marketing tools in tourism. The most common advertising sources used are: TV, radio and especially print advertising magazines, newspapers and brochures.

To finalize that point, we highlight the importance of taking into account, those several factors, which, determinate the tourist behavior.

Next point proceeds to examine how all of the elements, characterize and differentiate to the norwegian tourists.

3.6. Norwegian Tourists

At that point, we need to specify more and more, our customer. We have talked about elderly as a big customer in the EU and the rest of the world. Moreover, we have noted about tourist elderly (differentiating disabled and no-disabled tourist). Nevertheless, we want to focus our work in a particular user. Norwegian Elderly, who has high economic resources and one of their leisure-activities is traveling.

Currently, as into the rest of the world population aging is increasing (*table 3*), (*figure 3*).

Age	Alltogether	0 – 5 years	6 – 15 years	16 – 66 years	67 and over years
2012	4986	373	616	3468	817
2020	5334	402	647	3468	817
2030	5802	426	705	3646	1026
2040	6222	440	736	3797	1382
2050	6627	469	767	4009	1382
2060	7033	492	815	4203	1523

*Table 3.*Population recorded at January 1, 2012 and projected for 2020-2060. National Statistical Institute.

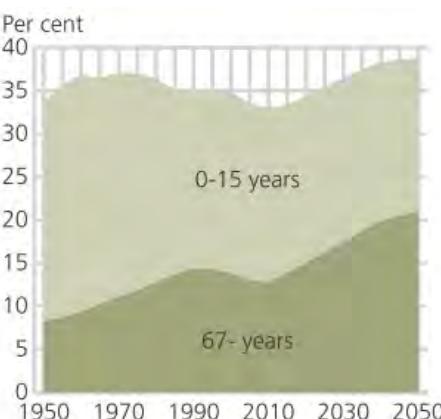


Figure 3. Percentage of children/young people and elderly in the population (2012). Statistics Norway.

In 1950, only an 8 per cent of the population were aged 67 or over, while today the share is 13 per cent. What's more this proportion will increase, reaching an 17 per cent in 2030 and 21 per cent in 2050.

Currently, the retirement age is fixed at 67 years in the public pension scheme.

All Norwegian citizens are entitled to get a state pension from the age of 67 in accordance with the Norwegian National Insurance Act (Folketrygdlagen).

The state pension is paid in full to Norwegian citizens who have lived in Norway for at least 40 years after the age of 16 and in lesser amounts to Norwegian citizens who have lived less time in the country.

In the next table, we can compare the different pensions of some European countries according to the EU's Mutual Information System on Social Protection (MISSOC), (*table 4*).

Country	Average Pension € /month	Minimal Pension € /month	Maximum Pension € /month
Luxembourg	1.592 € /month	1.023	4.735
Norway	1.053 € /month	870,41	2.040
Austria	953,12 € /month	604	2.220
Holland	900 € /month	-	-
Belgium	878,16 € /month	716,33	1.295,25
Germany	793,11 € /month	-	-
France	700 a 800 € /month	514,32	1.134,55
Spain	614,27 € /month	385	1.827
Ireland	589,2 € /month	476	488
United Kingdom	587,88 € /month	108	~ 428 and 840
Denmark	538,79 € /month	727	1.020
Finland	493 € /month	-	-
Greece	474 € /month	~201 and 357	2.058
Italy	-	403	-
Portugal	-	170	1.199 €

Table 4. Retirement pensions in Europe. (MISSOC).

As we can see, elderly in Norway has one of the highest pensions compared to the rest of Europe. Then, we know how much money they have, so we wonder: Where do they spend their money? In other words; Which is the most common destination they usually travel? And finally, Why do they choose that?

3.7. Destination Preferences

The total resident population of Norway is 4.6 million. Outbound travel from Norway for leisure purposes accounted for 2.626 million journeys in 2001 (Auno and Normann, 2003), almost 49 percent of all Norwegian outbound leisure trips.

According to the date base Statistics Norway, Spain is the most popular holiday destination abroad, with more than 600 000 trips per year, followed by Denmark, Sweden and Greece. These four countries have long been the most visited (though with some variation in their relative popularity) (*figure 4*).

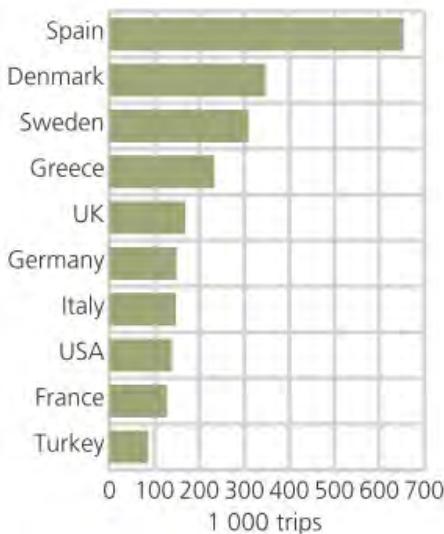


Figure 4. Number of holiday trips to most popular destinations abroad (2007). Statistics Norway..

N. Prebensen. (2008) developed a research called “Country as Destination—Norwegian Tourists’ Perceptions and Motivation”. That study tries to find answers to question like: Are there any motivational differences between Norwegian charter tourists visiting different countries? Would a person who claims to have visited Spain be different from someone who says has been to Greece regarding their motivation for traveling?

In order to answer these questions a questionnaire was designed and sent to potential respondents (5000) based on a customers listing of one of the largest tour-operators in Norway. Seventy-eight questionnaires were returned unanswered and 1,222 charter tourists from Norway to different destinations completed the postal questionnaire, thereby yielding a response rate of 24.8%.

It is widely known that people travel for numerous reasons. In this study, respondents were asked to rate 35 statements, as well, on a five-point scale ranging from not important (1) to very important (5). The items were adapted to outbound charter tours from Norway from Kleiven (1998; 1999), who based his study of motivational factors for domestic Norwegian tourists traveling in Norway on a number of qualitative studies as well as on some quantitative investigations, (*table 5*).

Adjusted scale	
Sun/warmth (a) feel the heat of the sun (b) enjoy the beach and swimming (c) swim in the sea (d) swim in a pool	Peace/quiet (a) getting away from push and stress (b) getting away from noise and pollution (c) recovering strength (d) avoid the push and stress of traveling
Accomplishment (a) using skill and knowledge (b) developing personal interest/hobby (c) learning something new (d) showing your skills	Fitness (a) getting a workout (b) working out, really tiring your body (c) taking care of your health (d) getting in shape (e) to be romantic (f) have enough time to do whatever you like
Family (a) having time for the family (b) keeping in touch with family living elsewhere (c) being with children of my relatives (d) see to it that the children have a pleasant vacation	Nature/culture (a) experiencing landscape and nature (b) going on organized sight seeing (c) experience the silence of nature
Culture (a) experiencing art and culture (b) seeing well-known places or sights (c) getting to know other countries and cultures (d) practicing foreign languages	Friends (a) keeping in touch with friends (b) getting to know new people (c) eat and drink in good company (d) not being lonely during the vacation

*Table 5.*The “Kleiven” Scale of “Inbound Tourism in Norway” and the Adjusted Scale for “Norwegian Outbound Charter Tourism”

Some of the conclusions obtained by that author were:

- The two most visited countries among the respondents were Spain and Greece. Among the 510 respondents who had visited Spain, 23% of tourist visited Gran Canaria. The second most frequently visited destination had been Mallorca, with 104 people.
- Of the 35 motivational items, only 8 were significant, because it got scored higher. These were “culture,” “avoid stress,” “fitness,” “accomplishment,” “sun/bathing,” “friends,” “kids/family,” and “hedonism.”
- Travelers placed a high emphasis on learning and experiencing culture (knowledge and adventure).
- The relax factor was also important for the Norwegian tourists traveling on a prearranged tour. It is possible that the need to relax impacted directly on why the tourists bought this type of tourist product, since it is an easy—and often a comfortable—way of traveling (the tour-operator arranging everything).

Furthermore, we know that Spain is the main destination for Norwegians.

Apparently, or these Norwegian tourists, living in the northern part of Europe, the need for sun and bathing were quite important. According to H. Myklebost (2008) in his study about Migration of elderly Norwegians, there is a main reason to travel to Spain, a part of the culture and gastronomy of this country; health. Climate is the main attraction of Spain. To many people, this is not just because they prefer the mild winter of Spain to the cold Norwegian winter. For the most of the Norwegian tourists among 67 years, the difference in climate means that they could lead a normal life, not having to stay indoors to avoid a heart or lung trouble, or escape the risk of breaking brittle bones on the icy pavements and roads of their native country. Known how is the Norwegian tourist, which are their preferences and features, it can therefore continue, with the discipline of tourism.

3.8. Types of Tourism

Knowing the mainly factors which influence on the tourist behavior, is obvious to think about different kinds of tourism, which can satisfy their different needs. According to the World Tourism Organization (WTO), there are seven main types of tourism:

- Sun and Beach Tourism: Located in coastal locations where the most of the time, the weather is sunny and soft temperatures. They focus exclusively on young families or couples without children.

- Sport Tourism: In this case, the main reason to travel is the sport, although the tourist experience can act to enhance the overall experience. Like sun and beach tourism, this type of tourism focuses on young families or couples without children.
- Adventure Tourism: It concerns to the trips done by a tourist, who looking for activities focused on physical exercise. That tourism is developed in remote and unexplored places. It is focused on young and couples without children.
- Nature Tourism: Tourism mainly dedicated to international experienced tourists, who travel with the objective of observing, living and appreciate the environment. It is addressed to seniors and couples without children.
- Cultural Tourism: Kind of tourism whose main objective is to discover the monuments and tourist places. Aimed to seniors, since generally, the economic level and cultural education of the tourist is above average. Therefore, we can assume that cultural tourism is adequate with our type of user profile.
- Urban tourism can attract a higher sector into the tourism market than another form of tourism. Generally, visits to local attractions and nightlife attract the interest of couples without children; cities attractions such as amusement-parks and museums, are frequented by families and couples whose children not living at home, as well as elderly people, are interested in cultural attractions.
- Rural Tourism: Tourism activities are carried out in rural residences, countryside holidays or big hotels. The distinctive feature of tourism products in the rural tourism sector is the desire to offer tourists a personal contact, and as far as possible, the participation of tourists in activities, traditions and lifestyles of the locals. It is addressed to seniors and couples without children.

The aim of this point is subsequently to get more information about the preferences of our costumer. According to the descriptions of the different types of tourism, it can be supposed that older people prefer a kind of tourism based on cultural activities, therefore, it can be defined the environment, where they will live their experience.

3.9. Tourism for All

Already known, the most important concepts about tourism and tourists as well as some of the main factors that characterize it, it's worth speaking of the concept of "tourism for all" as a basic rule to get quality in the development of tourism.

The tourist quality depends on many tangible and intangible factors, related to companies and tourist destinations.

faction of all the needs, demands and expectations of consumers for products and services with an acceptable price, under the conditions mutually agreed and the underlying factors that determine the quality such as safety, hygiene, accessibility, transparency, authenticity and harmony of tourism activity concerned about their human and natural environment”.

Therefore to get quality is necessary to consider the needs and demands of all consumer types, designing products and services for all.

In 1989, a group of British experts in tourism and disability published the report “Tourism for all”.

That report defines the Tourism for All as a kind of tourism, which designs and develops leisure tourism activities designed for the enjoyment of all kinds of people regardless of their physical, social or cultural.

Tourism for all, is composed of two main elements: social tourism and accessible tourism. This concept is key to our study because we believe that the elderly, is becoming increasingly key customers of products offered in the market and this is because we have designed products or services adapted to them taking into account the specific needs that appear from the limitations derived from age (physical or motor, intellectual, auditory or visual).

The International Bureau of Social Tourism (BITS) defines tourism as a whole of references and phenomena resulting from participation in the social strata of tourism modest tourism incomes, which has been made possible by social measures well defined. Such tourism is characterized by the basic law of any human life at leisure and enjoy access to infrastructure and tourist services.

Therefore, social tourism operators , government authorities, operators, etc, should develop mechanisms in order to prevent any exclusion of inequalities.

3.10. Accessible Tourism

On the other hand, the concept of accessible tourism is based on the principle that tourism is a social right for all. According to the WTO, accessible tourism is the set of services and infrastructure that allows access to this activity to an important segment of the population, according to their needs and interests: temporary disabled (pregnant women, plaster, etc.) and permanent (motor, sensory and intellectual).

Advanced societies have new problems. One of the most important is aging of the world population, as pointed above. Another relevant fact to consider is that 10% of the world population, i.e. 650 million people suffer from a disability. According to Eurostat data published (2005) there are about 500 million people with disabilities worldwide in Europe this figure is close to 50 million. That is, in Europe it is estimated that there is a potential audience of accessible tourism around 36 million people. (table 3)

Another relevant fact to consider is that a 10% of the world population, i.e. 650 million people suffer from a disability.

According to Eurostat, data published (2005) there are about 500 million people with disabilities worldwide in Europe this figure is close to 50 million. That is, in Europe it is estimated that there is a potential audience of accessible tourism around 36 million people. (*table 6*).

Country	Population with disability included health problems permanent (16-64)	Elderly (> 65)	Population with Including disability health problems permanent (> 65)	Population with Including disability health problems permanent	Population with disability physical capacity and economical traveling	Companions (0,75)	Market Tourism potential Accessible EU
Austria	708.690	1357000	474.950	1.183.640	828.548	621.411	1.449959
Belgium	1253.000	1507.000	632.450	1.885.450	1319.815	989.861	2.309.676
Cyprus	62.800	89.000	31.150	93.950	65.765	49.324	115.089
Czech Rep.	1.468.500	1458.000	510.300	1978800	1.385.160	1.038.870	2.424.030
Denmark	7.4.4C0	817000	285950	1.000350	700.245	525.184	1.225.429
Estonia	202.100	224.000	78.400	280.500	196.350	147.263	343.613
Finland	1.106.100	831.000	290.050	1.396.950	977.665	733.399	1.711.264
France	9726.000	9962000	3.486.700	13.212.700	9.248.890	6.936.668	16.185.558
Germany	14.272.500	15577000	5.451.950	19.724.450	13807.115	10.355.336	24.162.451
Greece	732.900	2.007.000	702.450	1.435.350	1004.745	753.559	1.758.304
Hungary	781.100	1.507.000	527.450	1.308.550	915.985	686.989	1.602.974
Ireland	296.600	636000	222.600	519.200	363.440	272.580	636.020
Italy	2551.000	11289000	3951.150	6502150	4.551.505	3.413.629	7.965.134
Lithuania	0'	370.000	129.500	129.500	90.650	67.988	158.638
Latvia	189.500	546.000	191.100	380.600	266.420	199.815	466.235
Luxembourg	34.700	68000	23.800	58500	40.950	30.713	71.663
Malta	20.000	54 000	18.900	38900	27.230	20.423	47.653
Holland	2.712.900	2313000	809.550	3.522.450	2.465.715	1.849.286	4.315.001
Norway	442.000	681.000	238.350	680.350	476.245	357.184	833.429
Poland	0*	5094000	1.782900	1782900	1.248.030	936.023	2.184.053
Portugal	1.400.600	1802000	630.700	2031.300	1.421.910	1.066.433	2.488.343
Romania	9:is:0	3255.000	1.139.250	2.041.050	1.428.735	1.071.551	2.500.286
Slovakia	313.500	643.000	225.050	538560	376.985	282.739	659.724
Slovenia	276.900	309000	108.150	385.050	269.535	202.151	471.686
Spain	2386000	7103000	2486050	4.872.050	3.410.435	2.557.826	5.968.261
Sweden	1.168.300	1.568.000	548.800	1.717.100	1.201.970	901.478	2.103.448
UK	10.984.600	9.536.000	3337.600	14322200	10025540	7.519.155	17.544.695
Total	54.706.490	80.903.000	28.316.050	83.022.540	58.115.778	43.586.834	101.702.61

Table 6. Accessible Tourism Market Potential (EU).Ministry of Industry, Trade and Tourism of Spain.

As we can see on this table, there are about 100 million elderly in the EU of which about 20 million have a disability, data, that we should not underestimate, since the not adapted products or services, are one of the dissatisfaction causes of the client.

On the other hand, attract this market segment will contribute to:

- Attracting market share, increasing parallel the levels of business profitability.
- Capturing a customer called in many cases “Multicostumer”. According to the manual published by the European Commission, “Towards a Europe Accessible for Tourists with Disabilities”, the figures on the potential tourism of European citizens with disabilities are not conclusive, because it is estimated that each trip made by a disabled person attracts 1.5 companions. These data allow us to name the segment of people with disabilities or reduced mobility as “Multicustomer”.
- Increasing tourism in any time of the year. Since they do not have work responsibilities, have greater availability to travel throughout the year.
- Improve the tourist image of destinations, offering an image intended to anyone without any distinction and/or exclusion improves the travel destination image.

Therefore accessible tourism is another point of view to take into account in future researches about tourism, above all in relation with elderly tourism. Nevertheless this project is focused over a specific kind of people belong to elderly, active older people, who understand tourism, as support to increase their life quality.

Summing, the role of the elderly in the tourism sector is decisive. Their participation, increase the demand during all the year, causing an economic growth. Consequently, to study their behaviour as a tourist, it allows to differentiate, several environments, where they act. Finally, apart from the tourist behavior, for older people, it is also crucial to take into account the possible disabilities of aging.

4 Attitudes toward service

The emphasis of this chapter is to explain how different environment elements surrounding the costumer, it can influence in their opinion about a service.

After obtaining some knowledge as to the elderly, tourism, we will treat the service concept and its relationship with the tourism.

The services sector represents a decisive role in the productive structures of the economies in the developed countries and an increasingly important place in emerging countries. As mentioned above the tourist service is a basic source of income for the world economy.

Tourism has maintained remarkable growth rates and much higher than in other sectors of the economy. According to the WTO in 2012 has been 1.035 million tourist arrivals around the world, 39 million more than in 2011, with higher growth of tourism in emerging countries (+4.1%) than in developed (+3.6%). In Europe, despite the crisis suffered, has received 539 million tourists who meant an increase of 3.3 % over 2011.

Regarding tourism as a service for the population, it's worth pointing out, the evolution developed over the years. A change about its features, which Fayos (1994) calls the New Age of Tourism. The main features are:

- Holidays are flexible and can be purchased by competitive prices.
- The design and development of tourism services are guided by the individual consumers needs.
- The marketing focuses on specific market sectors, with different needs, interests, etc.
- More experienced consumers, who have more complex motivations, consider the environment and the local culture as part of the tourist experience.
- New information and communication technologies have become the key tools for consumers, which will provide the flexibility to meet their existing needs.

As we know, in the world of tourism, there are many elements that interact with each other making possible the viability of this service. But we wonder, which is the role of designers within this complex network?

Tourism is a sector, which suffers a constant process of innovation, because these services are intended to provide new emotions to tourists, if such services are not innovative, activities become repetitive, which causes an attitude of rejection by the consumer (Plog, 1974, 1988). When a tourist travels to a particular place, it wants to feel satisfactory emotions in each of the components of his trip, and it is in this aspect that designers act.

The discipline of "service design" allows using different types of tools, to understand how is the relationship with the service user, the evolution of the customer experience when it comes into contact with a particular service and it resolves any problems identified therein.

Therefore, is indispensable to know the interaction points of customers (called touch-points) and designing/improving the service to make it as efficient

as possible adapted to customer needs, keeping only those activities that really add value.

We need therefore to lead our efforts in the study of the elderly.

4.1. Human Beings and their experience environments

Focusing on the study of all the elements surrounding the elderly in the area of tourism, the experience context, consists of all the people and elements surrounding the human being, since decisions about the choice of tourist activity, is taken in context through daily acts related to tourism (information on destinations over magazines, TV, experiences shared by friends, family, etc)

It's what Binkhorst (2005) calls as knowing the tourist like a human being.

Each person is surrounded by different experience networks in experience environments constantly changing.

Considering the tourist as a human being, who moving to different contexts allows us to learn about their values and needs.

First, family atmosphere is located (figure 5). It is in this area where you spend most of the time and is one of the most influential context's tourists.

Furthermore, the individual draw on other information sources (figure 6) such websites or brochures, etc, also, establishing relationships with anyone who can provide information about the destination, such as contact with friends who can relate their travel experiences.

All these acts are done to carry put the desire and the need to travel, changing the context of common experience.

Finally, when making the final travel decision, tourism experiences networks consequently changes (*figure 7*)

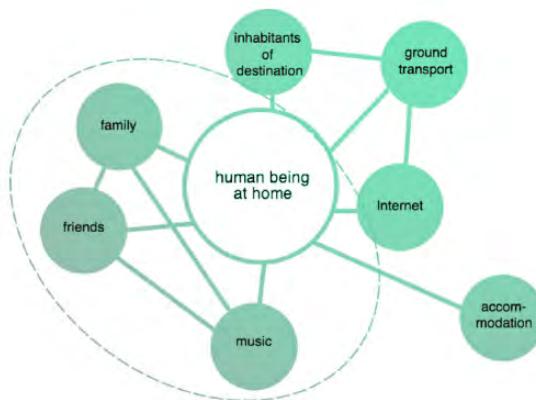


Figure 5 .Tourism experience in the home network environment experience. Binkhorst 2005.

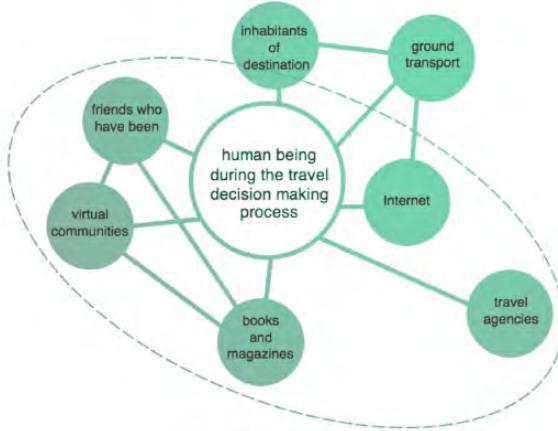


Figure 6. Tourism During the travel experience network decision making process. Binkhorst 2005.

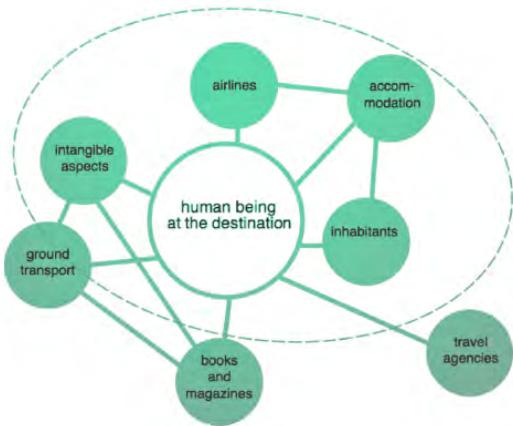


Figure 7. Tourism experience away from the home network environment. Binkhorst 2005.

Therefore, it is necessary to consider tourism as an experience network in which various stakeholders co-create as to engage in tourism experiences. On that one, the tourists are permanently exposed to a variety of elements, which influence the terms of their trips: the Internet, mobile devices, travel agencies, tour operators, transportation, accommodation, guides, local companies that offer activities in the destination place. Thinking of the human being as a key element to the area of tourism has another advantage, since it allows us to consider not only tourists but also is included human beings living on the place of destination, taking into account in this way, all the network elements of tourism.

5 Human being and new technologies

The general discussion of this chapter allows to know importance of the new technologies for the human being. Moreover, it examines the relationship between those concepts.

5.1. Importance of knowing the user

A key factor to engage this huge potential market is to provide information, that must be trusted, accurate and accessible to all users. Therefore, the next step is human-centred design.

One of the most important steps to the design process of any type of product or service, is learning to identify the features and needs of the audience which is aimed.

The buyer finds satisfaction when the product purchased solves correctly their problems (Torrecilla, 1999). This type of design is known as the user-centred design (UCD).

Currently, we know many details about our customer behavior, preferences related to the service (tourism). The goal of the project consists of designing an appropriate support to make the users experience an easier service. That support belongs to the net of new technologies. In other words, how is the relationship between human beings and those.

5.2. Human factor

“Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.” (Hewett et al., 1996).

Then, in order to understand the aim of the project, we are going to talk about how the new technologies affect to the human being.

According to J. Shand (2012):

- There are 2.000 millions internet users worldwide
- 4.800 millions mobile phones with internet access.
- More than a trillion websites.
- 30.000 millions videos and pictures, shared over networks.

The Internet has influenced in elements, which affect all of us, like: education, politics, tourism, but especially in relation with the social and the way in which humans communicate with each other, making easier to keep in touch with relatives, friends, clients, suppliers, etc. We can suggest that the internet, has become in the most popular and useful social media that never existed.

Therefore, companies and institutions need to understand how to act in this new environment. In our case, it is important to understand how to communicate effectively with the user or client. In other's words, we are going to insist, in the study of the relation between older people and the new technologies.

6 The integration of elderly tourism and new technologies

Chapter 6 focus on the relationship between each one of the keys of the project. These are elderly, tourism, and new technologies.

6.1. Tourism and New Technologies

In order to justify the choice of designing an interface to improve the traveling experience older people, in that point it is studied the relationship between tourism and new technologies (*figure 8*).

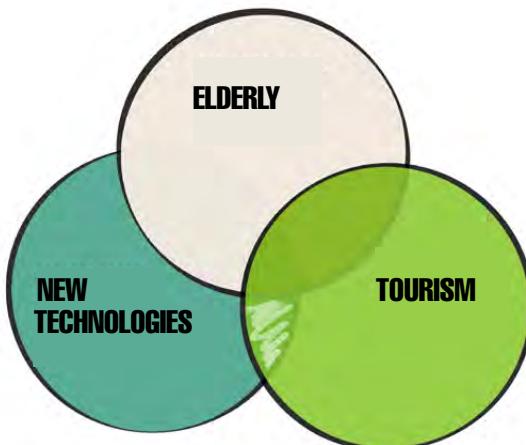


Figure 8. Relation between elderly and new technologies.

As we commented upon at the chapter 2, the advertising sources have an important role related to the external determinants of tourist buying behavior.

We emphasised the popularity of TV, radio and especially print advertising magazines, newspapers and brochures. However, in recent years it has investigated the use of the Internet as another element of marketing, currently it is known as online marketing. Some researchers (Andreu, Bigné and Ruiz, 2004; Favian and Guinaliu, 2004, Millan and Esteban, 2002; Ruiz and Tronch, 2007; Ruiz, Izquierdo and Calderon, 2007; Suarez Vazquez and Diaz, 2006) have obtained the following conclusions:

- Purchase of tourism product has increased over the Internet.
- Tourism products are well suited to systems and processes related to the Internet largely multimedia content.
- It is essential to have an easy understanding website to locate and consult by the tourist but also it must be interactive and incorporate rightly tourism marketing variables.
- Supports of payment through the network must be clear, safe and fast.
- Apart from the Internet, tourism business must adopt other means and systems, which largely involves technological and commercial renovation, as: iphone social networks, etc.

Highlighting the importance of this last point, that's mean, the relation between new technologies and customer buying behavior, we wonder: Do the latest technologies get to older people?, Will they use it? is it accessible to these people? Do they believe in its usefulness? Can we change their point of view, becoming the new technologies in a indispensable support in their daily life?

6.2. New Technologies and Elderly

Once dicussed about the relationship between new technologies and tourism, next point is centrally focused on the the relationship between new technologies and our costumer (*figure 9*).

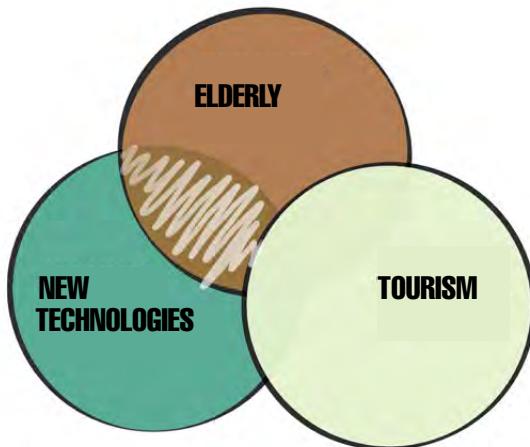


Figure 9. Relation between elderly, and new technologies

As mentioned above, nowadays, people aged 60 years and over, are an important percentage of the total population. Taking into account that reality, it could be thought that elderly should be one of the most influential groups for the development of new technologies, (above all Internet).

Nevertheless, they are the most distant group of people, from the technological circles and not just because they are not taken into account sufficiently, to the development of interfaces adapted to their needs and skills, if not, by their own fears and prejudices.

Barriers against new technologies

Therefore, there are some barriers which obstruct the relationship between elderly and new technologies but; What kind of barriers?

According to M. Rodriguez there are three sorts of barriers:

- Mental barriers: Are those produced by the fear of the unknown the own people judge the Internet, and everything related to it, as something complicated.
- Physical barriers: There are, difficulties which elderly found at the moment to interact with interfaces due to changes associated with aging. These changes affect how they perceive their environment. The elements affected are:
 1. Vision: Aging damages optical properties of the eye reducing the sharpness of images and altering their chromaticism. It also produces an inadequate performance in the neural mechanisms that respond to changes in light levels. Moreover, it reduces the ability to combine information from two eyes to perceive the distance and therefore reduces the hand-eye coordination, (Belsky, 2001).
 2. Audition: Aging causes a general deterioration of this ability, which is especially important at high frequencies (higher than 1000 Hz), (Lillo, 2004).
 3. Motor control: Older people have more difficulties developing physical efforts and keeping a posture, because the aging produces: a reduction in muscle strength, increased bone fragility, degenerative problems, which limit their mobility and produce painful movements, (Cerella, 1990).
 4. Cognition: According to Hom and Catell (1966), there are two aspects of the intelligence which are affected by the aging:
 - a) Crystallized intelligence: relates to the use of the knowledge and skills acquired throughout life.
 - b) Fluid intelligence: is a basic reasoning skill used to solve different problems and that relates to the ability to make inferences, to reason inductively and to have good working memory.
- Economic barriers: Even the tough Norwegian elderly, dispose one of the highest earnings of Europe, the high price of informatics systems and the monthly Internet fees, are sometimes, another problem to take into account.

Subsequently, already known, the general existing barriers between elderly and new technologies, it is also necessary to specify that relationship, taking into account the support, which will be designed. Consequently the next point is centrally focused in the Internet and mobile phones..

Elderly and the Internet

The Internet is the key of the technological revolution we live. According to M. Kiel (2005). The Internet is a source of education, information, and interactive information to remain current and involved, and have some fun.

Approximately, the 96% of young people use the Internet daily. However, What happens with elderly?.

According to the NIS (National Institute of Statistics), in 2006, the 13,5% people aged 60 years and over had used anytime a computer and the 6,1% had surfed on the Internet. However, in 2010 that percentage increases to 27% (*figure 10*).

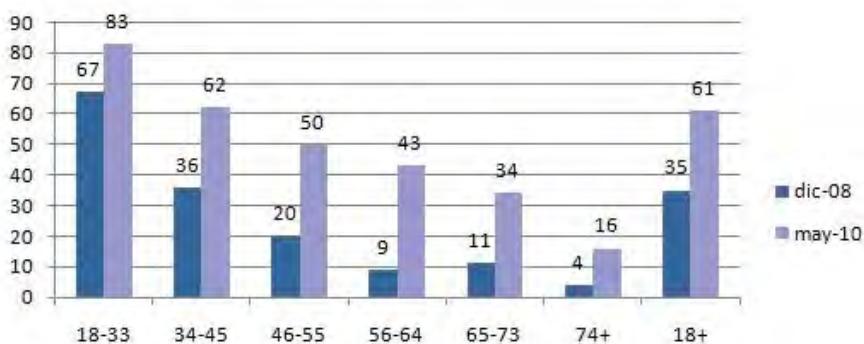


Figure 10. Changes in the use of social networks, 2008-2010, by generation. University Carlos III, Madrid (2010).

Thus, it seems that exist a tendency for the increase of the use of the

The internet among all age groups, so the differences between them are reduced.

The use of the Internet represents for elderly a support to integrate themselves into the society and establishing new alternatives, which satisfy their needs, increasing their life quality, having effects on decreasing loneliness, boredom, helplessness, and declining mental acuity, while enhancing morale. Moreover, computer use by the elderly enhances their independence as they can now shop, pay bills, bank, learn, and engage in chat groups, etc.

According to L. Torres and C. Ballesteros (2005). One of the most common uses of Internet by elderly are task as: email, seeking of medical and financial information and looking up news. On the other hand e-commerce is the activity, which generates more distrust.

Other features that define the behavior elderly and the Internet, for instance: they spend more time reading texts of the websites, understanding it better than young people. Spend more time solving tasks, as well. Make fewer clicks per minute, tend to click on sites that are not links, have problems with computer jargon, have trouble locating their position within a Web site, have difficulty with the scroll, etc.

Elderly and mobile phones

Apart from the use of the Internet it's worth pointing out the importance of one most important market within the new technologies, for elderly; Mobile Phones.

Does a mobile phone have the same importance for the elderly compared with youth or adults? Are elderly in touch with the current world of mobile applications and services?

In 2012 R. Martinez and M.Lera, carried out a study regarding the relationship between elderly and these ones. In this study participated 165 seniors, people aged between 65 and 70 years.

As for the results is important to keep in mind next conclusions:

- A 96 % of the participants owned a mobile phone (53,8 % received their first mobile phone as a gift).
- With regard to the benefits of, and motivations for, using mobile phones, they found that the elderly did not use mobile phones to meet new people or did they feel better when they were with others because they had a high quality mobile, or did they believe it was easier to express themselves via mobile phone than by speaking face-to-face.
- The mobile phone did not have an identity function because to have a high quality mobile phone did not make them feel better when they were with others, and they thought they could do without their phone.
- The most used functions making phone calls, followed by creating a contact list, checking the time, and sending text messages. They seldom use additional functions such as creating videos, taking photographs, or surfing the Internet.
- To have a mobile phone provided them with social support, particularly by helping them keep in touch with relatives, which helped them to feel secure in case of possible emergencies, and strengthened their autonomy and sense of freedom and independence.

Thanks to these conclusions we know that the use of mobile phone, has a potential for social interactions between elderly and the rest of the population. However, the functions and the use of mobile phone by them are basics, thus, are removed of the current innovations which android and 3G mobiles can offer.

Norwegian Elderly and new technologies

The Internet access

To be more specific with our future consumer, we concentrate our research in Norwegian people.

According to the source Statistics Norway, in 2012, 93% of households had access to the Internet.

Only, 7 % of the Norwegian population aged 16-74 years have no access

to the Internet in 2012. This group mainly consists of people aged over 64 years. Within that whole of people, 18% are people aged between 65 and 74 and 40 % people aged between 75 and 79, are 40 per cent. (the rest of the percentage belongs to households without children and with incomes below NOK 200000). However, as for the use of computers and the Internet, a total of 95 % of the population has used a computer during the last year. A special emphasis should be laid on the elderly due to the corresponding figure for people aged between 65 and 74 years was 74 %, an increase from 67 % last year.

Mobile broadband access

Mobile broadband has increased rapidly in the last three years. In total, 48 % of households have access to mobile broadband in 2012, an increase from 34 % in 2011(5% belongs to retired elderly). Most of these people also have access to a fixed broadband connection at home. The percentage of households with only mobile broadband has increased to 8 per cent.

Use of social media

The share of the Norwegian population that has participated in social networks over the Internet during the last year has increased from 59 to 63 per cent. The increase is largest among women and the older age groups (29%).

Activities over the Internet

Many Norwegian people used the Internet to read online newspapers and to search for information on, for example, goods, services, travel, accommodation, etc. in the last year. Even buying and ordering goods or services for private use over the Internet is becoming increasingly popular. The total share of the population that has done e-commerce during the last 12 months has increased to 76 %, (*figure 11*), (*table 7*).

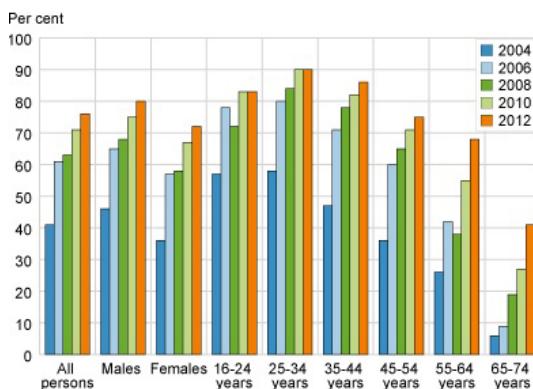


Figure 11. Part of the population which have bought or ordered goods or services for private use over the Internet. Statistics Norway.

As we can see the most of the Internet traders bought or booked travel or holiday accommodation. Focusing in elderly, we can check the next table (*table 7*).

Activities over the Internet	2011		2012	
	65-74 years	75-79 years	65-74 years	75-79 years
Used the internet for e-mail	-	-	60	37
Used the Internet for finding info about goods and services	41	7	53	25
Used the Internet for services related to travel and accommodation	35	9	36	12
Used the Internet for downloading software	20	3	-	-
Used the Internet to view / download newspapers / magazines	52	14	58	33
Used the internet for subscribing to online news	3	-	-	-
Used the Internet to look for a job or sending a job application	-	-	-	-
Used the internet to seek for health related information	26	12	-	-
Used the internet for banking	57	19	59	42
Used the internet for selling goods or services	11	2	18	10
Used the Internet to look for information about education	8	2	-	-
Used the Internet with the purpose of learning	31	11	-	-

Table 7. Activities performed over Internet (%), by age, contents and time. Statics Norway.

According to with these data, travel and accommodation, (which is one of the most useful keys for our study), is the fifth most common use of the Internet, (the first one is the use of emails, followed by, banking, looking up news and finding info about goods and services, which confirm the conclusions obtained by L. Torres and C. Ballesteros, commented above).

Summing up, we can conclude that the Internet has become in a useful information source for Norwegian elderly, even the percentage of the use of the Internet increases each year, slightly. As for the use of the Internet over mobile phones, currently the percentage of elderly who employ that support is very small. However, it's worth pointing out their participation in social networks, which is a relatively new phenomenon, that's mean, elderly are being increasingly integrated into the world of new technologies.

Accessibility and usability

To finish that point related to human-centred design and in order to avoid that problem, it's worth pointing out two concepts within that discipline; accessibility and usability.

On the one hand, accessibility is defined as « whole of features which must dispose an environment, product or service to be used in terms of comfort, safety and equality for everybody» (Imserso, 2003).

The aim of accessibility, related to the interface design, is to make a support for anybody regardless of any kind of disabilities, as for example, the physical barriers, discussed above.

On the other hand, usability is defined by the ISO 9241 standard as “the level in which a product can be used by specified users to get specified goals with effectiveness, efficiency and satisfaction in a certain context of use”. Therefore, in order to design a usable interface, it's necessary to know some aspects related to our users. On that way, we design for retired Norwegian elderly, then, we have a group of people aged 67 years and over, therefore it's necessary taking into account aspects as, all the barriers explained above, their language, etc.

Summing up, there are some points which we must follow to develop an accessible and usable interface, (Center for Universal Design, 2002)

1. Universal use for everybody: useful and available design, for any group of users.
2. Simple and intuitive use: the design computer skills, etc.
3. Tolerance for error and misuse.
4. Little physical efforts required: appropriate manipulation regardless user's body size, posture or mobility.
5. Satisfaction: we will have got that attribute when the rest of the points have been satisfied.

6.3. Elderly and Tourism

Finally, in order to finish that chapter, we will discuss the relationship between elderly and tourism (*figure 12*), finishing then, the study of the connection between the keys of the project.

It has been mentioned above, the importance of tourism to the worldwide economy.

Furthermore, has been specified a particular sector of the population to concentrate on this project. This sector is the elderly. According to G.Carney D.Costello (2006), here is an increasing number of senior citizens in western Europe with high incomes.

The aim of this project is to design a service that pleases the needs of these tourists, improving their experience in the destination.

According to the concepts that have been discussed in terms of the importance

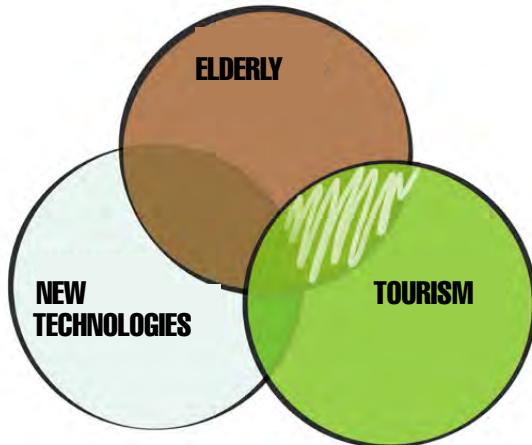


Figure 12. Relation between elderly, and tourism.

According to the concepts that have been discussed in terms of the importance of service design, the key to gain clients that we are interested, is to know their demands, needs and requirements.

In the relationship between tourism and the elderly, we have concluded that leisure time is one of the essential areas in the life for older people which it tends to be dedicated to the tourism, because, directly or indirectly it affects their physical, mental and social development(Vellas, 1986).

They are using this increased leisure time for travel and holidays. Despite their possible need for a more personal service when on holiday, they do not wish to be pigeonholed as 'elderly' or 'old'.

Sometimes, the stage of retirement negatively, affects people due to the inactivity because if the lack of job responsibilities. However, tourism can help overcome the aging process, keeping them "active" and on the other hand to avoid one of the biggest problems that the elderly may present, which is the "loneliness" or even complete lack of sense in the last stage of life.

As we mentioned in the definitions of tourism the tourist-leisure activity means traveling from one location to another and is primarily a social medium through which people satisfy their basic needs.

If we remember, there were different features that defined the activity, such as: movement to another place different than their residence, a leisure manifestation, discovery, interaction with environment, experience, temporary, intercultural contact and economy. Also in the tourist experience social interaction processes involved as a result of the effects of tourism activity has on tourists

and / or the local population (E. San Martin, 1997).

Furthermore, the practice of leisure-tourism is linked to the nature of subjective leisure experience, which involved different conceptions which emerge in each subject and that will be modified along its life cycle (Kelly, 1996, cited in E. San Martin, 1997). These can origin that the tourists give a different meaning and participate in this activity with very different feelings and ideas, because as we discussed in the previous step, the leisure-tourism is the product over the whole of the personal experiences that are given a particular context, along with its social and situational influences.

To deal with this point we wonder, what can be the factors that exist within our society that can make older people “traveling” or “do not travel”? What influences that some seniors travel or not to travel?

On the point about tourism, we talked about the external (prices, promotions, etc.) and internal (attitudes, beliefs, etc) factors influencing tourist behavior. But focusing on the senior sector, there are others variables, such as the phenomenon of aging.

Summing up, it's worth pointing out and according to Armadans, et al. (2010) that the phenomenon of aging is a multidimensional nature (related to their social participation within the society, their psychological and biological state linked to that aging process, etc). This confirms the fact that each consumer is different from the rest. The leisure needs and recreation activities of one senior citizen are not necessarily those of another. In addition, this is the main challenge we are facing in the development of this project.. To discover their interactions (touchpoints), how the user feels to interact with the service.

Tourism motivations

Motivation studies are one of the main topics about tourism researchers. Since a theorist point of view, researchers say that motivations are: the reasons which explain our behavior, essentials to understand the process of making choices about travel and to value the satisfaction of the tourist-experience. (Pearce, 1982; Snepenger, King, Marshall y Uysal, 2006).

Therefore, we understand the motivations as these reasons, that stimulate the decision to travel.

In the very end, people decide to travel, because they have different kinds of needs, which must be satisfied.Regarding to that, according to Maslow (1954) there is a hierarchy of five categories of needs in the context of tourism:

- Physiological: That is the strongest one. The need for relaxation and recuperation is often given as a key reason for the taking of holidays or vacations.
- Safety: These needs are likely to manifest themselves for most people by choosing destinations that they feel are safe and secure to visit. For

example, acts of terrorism or high crime tares act as a deterrent to tourism. Conversely, some individuals who feel that the risk has been removed from their daily lives may search for “risk” through tourism. However, this is likely to be in managed form, largely under the control of the individual.

- Relationships: The need to establish relationships with other people is essential for their psychological well-being. Tourism provides opportunities to develop relationships with family or friends. It also offers opportunities to make new friendships.
- Esteem: Different kinds of experiences through tourism can build social esteem.
- Self-actualisation: Tourism may play an important role in the self-fulfilment of the individual.

On the other hand, and as we commented above and according to Fleischer y Pizan (2002), not all the elderly has the same preferences and motivations. There are differences in genre, age, demographic features, health, etc.

One of the first researchers to question the homogeneity of this group was Shoemaker (1989). In his research, he identified three different groups:

- a) The first group, called “passive visitors”. The main reason to travel is to visit friends a relatives but also encouraged them to travel if there is good Public transport, good hygiene and cleanliness, personal safety and opportunities to meet and interact with others.
- b) The second group, called “enthusiastic fighters”. Their main reasons to travel are being with their family, to seek novelties, to increase their knowledge, to escape of house works. What’s more, the main elements which encouraged them to travel, included: transport, hygiene and cleanliness, personal safety, and good weather.
- c) The third group, “culture devourer”, has motivations related cultural activities, historic and archaeological destinations. As the other two groups, they value elements as: hygiene and cleanliness, etc.

On the other hand, exist a series of negatives element, which cause an attitude of rejection to travel.

Fleischer y Pizam (2002) shows us in their results, negative elements as: poor health, lack of information about available options, much planning for the trip, lack of resources, lack of transportation, lack of approval from the family, lack of time, lack of companionship, lack of desires of travel, etc. Moreover, these authors affirm that the main elements which influence negatively in elderly to travel or not, are earnings and health. Furthermore, there are some barriers, related real limitations due to the age.

Older people can feel limited because of the worries about what people think about them, even what they think about what they are able to do by themselves. All of that cause, seniors give a different meaning to the tourist-activity, even to participate in these activities with different ideas and feelings.

Summing up, we know that some studies have treated that sector as a homogeneous group, based on for example, socioeconomic status.

Nevertheless, due to the social changes and taking into account tourist-customer considering that the current consumer does not belong to a single pattern, we should keep in mind that, this group is composed of several tourists, who have interests, attitudes and new consumption patterns towards tourism, what's more, probably the next elderly generation will have different preferences compared with the current generation.

Information source

Motivations and barriers form part of the touch-points within the network which influence to the customer. Even though, it is worth pointing out the influence of information sources.

Mansfield (1992) classified information sources for travel into two main types:

- Formal or impersonal communication sources, such as through travel agents, brochures, travelogues, guidebooks and maps.
- Informal or interpersonal communication sources with friends and relatives.
- In several studies, conclusions has been reached, regarding theses information sources used by elderly, (Chen, 2009; Cleaver, 2000; Horneman et al., 2002; Grande, 1993; Shim et al., 2005). The main information source to that group is their own experience.
- The information search process is conditioned by consumer income, their cultural level and level of socialization.
- These consumers tend to take information by themselves. Then they contrast that with the information offered by other external sources.
- Mainly, they obtain information over their family, friends, known people, neighbours, etc. (that phenomenon is known as world of mouth).
- Elderly like reading and listening the radio. Magazines are very effective because older people preferred to read stories and to view pictures in greater detail about specific destinations which they were interested in.
- In the coming years the use of the Internet will grow and use more over the Web and email.

The next table (*table 8*) shows the importance of these information sources for elderly.

As we can check on that table, the information obtained through the personal experience is the main information source specially by closest people with whom the elderly are in daily contact.

Information source	Mean importance score (5= extremely important, 1= not important at all.)
Family	3.62
Past experience	3.55
Friends	2.77
Magazines	2.52
Newspapers	2.34
Television	2.21
Consumer publications	2.15
Direct mail	2.13
Point of purchase displays	1.89
Neighbors	1.79
Radio	1.63
Travel agents	1.51

Table 8. Perceived importance of pre-purchase information sources for elderly consumers (Capella and Greco, 1989, p. 150).

Finally, as the same way as several authors, tried to divide tourist-elderly in different groups depending on their motivations, preferences, etc, Kim et al. (1996) examined the potential relationships between travel motivations and information search behavior distinguishing three information seeking groups:

- Knowledge-seeking travellers, were the most active among groups that wanted to experience new things, to visit museums and historical sites, to seek intellectual enrichment and to visit new places. These travellers were more likely to consult official information sources, such as state tourist information offices, Chambers of Commerce, or convention and visitor's bureaux, at a specific destination before they made their travel plans.
- Escape group of travellers, sought warm-weather activities to escape the cold weather and everyday routine, and preferred rest and relaxation to other more active leisure activities. These travellers were less likely to search for travel information.
- Kinship-seeking travellers, who travel to spend time with friends and relatives. These travellers were not interested in searching for travel information.

Then we know now, all the different elements, which influence on elderly to choose to travel or not.

Summing up, we have discussed about the connection between older people, tourism and new technologies.

Currently, older people understand tourism, as one of the best activities to spend their free time, due to their retirement.

Subsequently, new technologies, are becoming in an essential tool for tourism, as an information source, a marketing tool, etc. Thus, the use of the Internet, more and more utilized by the elderly, allows to engage different groups of customer, therefore, in this fact is located the decision to design an interface as the final goal of our project.

7 User research for interface design

This chapter focus on the study about our future user. For this research, we will use different “tools” like the story board and interviews, in order to get the solution for our interface.

After knowing the necessary knowledge about the three different keys of that project, “elderly, tourism and service”, we continue with the next step, which is, interface design.

The different interface features, that we are going to design depends on the user features.

We know that our customers are Norwegian’s elderly tourists, who, as a tourist has some specific needs: demand quality, untouched nature, culture, history, famous places, peace and quiet and safety. Health and concern about the environment may also be included within the concept. We know that they can afford medium prices and moderate luxury as well, due to their incomes.

Finally, we have to consider that they have a good relation to the Internet and is increasing their relation to the rest of new technologies as mobile phones and other kinds of electronic devices.

7.1. Storyboard

As we commented upon at the chapter 3 attitudes toward service, it is essential to know the environment elements, which influence to the customer, in order to design a product or service, according to their needs and demands.

One way to know those elements, is the use of the tool known as story board.

According to L. Vertelney and G. Curtis, (1990), the story board is a tool derived from the cinematographic tradition; it is the representation of use cases through a series of drawings or pictures, put together in a narrative sequence.

In other words, it uses a sequence of images to tell a more complete story about people’s interaction over time, where each image in the story board represents a particular event. They communicate information about the location where the interaction takes place, present the people as personalities, and provides details about the other actions and things people are doing as they interact.

The context developed in our story board (appendix 1) are based on three main steps:

- Experience before traveling.
- Experience during the trip.
- Experience after the trip.

This story board is going to be used as a helpful tool that will complement the next step in the creative process, the interviews.

7.2. Interviews

One of the main features of the project, if not the most important, is that it is focused on the study of older people, their needs and preferences. Thus, it has been considered necessary, to include these people in the creative process of the interface.

For this reason, many interviews are being done and recorded, to Norwegian older people. Those interviews are centrally focused on their last travelling experience. Similarly were undertaken some questions about their general travelling habits.

Additionally, In order to know new contexts, where the tourist lives their travelling experience, it has been used the pictures designed for the story board.

The experiment consisted of giving them the different pictures, disorderly. Subsequently, they had to order the different environments according to their own experience.

That process has been divided in three steps:

1. First one, we have interviewed 11 older people, women and men, spending around 15 and 20 minutes with each one.
2. In the second round, 4 people were interviewed, spending, this time around 1 hour with each one.
3. Finally, in order to compare and check the obtained information, we interviewed an elderly couple, spending again around 1 hour.

First round

As we commented above, in this step, 11 people were interviewed. In order to structure the interview, a questionnaire was designed (*figure 13*), with 22 questions related to their travelling experiences and habits.

The interviews were done around the city center of Trondheim city.

Once the interviews were finished, those has been heard again, in order to collect the more noteworthy information. In the next table, it is shown some of the main topics discussed during the interviews. (*table 9*).



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This questionnaire has been designed, in order to get information about travelling experiences, from real people. That information is going to be used to develop Master project, that consist of the design of an interface to improve these travelling experiences.

Name:

About your last trip.

- 1º Where did you travel last time on holidays?
- 2º When did you travel last time on holidays?
- 3º How many days did you spend on your last holidays?
- 4º Who did you travel with?
- 5º How did you go to the airport/train station?
- 6º How did you feel, when you arrived at your destination? *for example: scared, excited, sad, etc*
- 7º Which was the first thing, that you did when you arrived at your destination? *for example: to call my family, to take a taxi to go to my hotel, etc)*
- 8º What kind of activities did you do? *for example: visit museums, to go to the beach, etc.*
- 9º Which was your best memory of your last holidays?
- 10º Which was your worst memory of your last holidays?.

General questions.

- 11º Which is your main reason to travel? *(for example: getting away from push and stress, experiencing art and culture etc*
- 12º How did you choose the destination to travel? *for example: advice of a friend or relative, reading magazines, etc*
- 13º When you choose a destination, do you usually search information about this place?
- 14º What kind of information do you search? *for example: weather, prices, activities to do there, etc.*
- 15º What kind of information do you use during your trip? *for example: maps, official guides, etc*
- 16º Do you usually plan your trip by yourself?
- 17º What kind of activities, do you prefer to do on your holidays? *for example: visit museums, to go to the beach, etc.*
- 18º When you travel, do you like to eat the typical food of your destination?
- 19º During your trip, Are you usually in contact with your family/friends?
- 20º In that case, How do you usually do? *for example: by mobile phone, by internet, by postcard, etc.*
- 21º When you come back home, do you share your holiday experiences with your friends/family?,
- 22º How? *For example: sending emails, sharing photos, etc.*

Thanks for your collaboration

Figure 13. Questionnaire.

Destination	Tenerife	Turkey	Barcelona	La Palma	Asturias
Days	14	8	7	4	8
Month	March 2012	March 2011	April 2012	March 2013	Augost 2012
Travelers	Wife	Friends and wife	Hunsband	Hunsband	Hunsband
First time	No	Yes	No	No	Yes
Destination choice	Friends	Friends	Friends	Friends	Friends
Reason to travel	Weather relax good experience last time	Weather relax new culture	Weather relax new culture	Visit friends weather relax good experience last time	Weather relax new culture
Useful info	Friends, tourist office	The internet	The internet	Friends, the internet.	Friends, the internet
Activities	Walking, hiking	Visit museums explore the city	Explore the city, shopping	Visit museums explore the city	Explore the city, shopping
Typical food	Yes	Yes	Yes	Yes	Yes
Feelings	Goog	Excited	Relaxed	Happy	Fun
Best memory	Teide	Little village	Camp Nou	Musical	Accomodation
Worst Memory	Puerto de la Cruz	Come back	No	No	Rain
Contac with family	Email	Email	Sms	Sms	Call
Share experience	Telling and show photos in live	Telling and show photos in live	Telling and show photos in live	Telling and show photos in live	Telling in live, social networks
Social networks	No	No	Yes	No	Yes

Table 9. Interview results.

Destination	Marbella	Alicante	Tenerife	Rome
Days	7	14	7	11
Month	Augost 2012	June 2012	March 2013	March 2013
Travelers	Hunsband	Family	Sister	Friends
First time	No	No	No	Yes
Destination choice	Family	Family	Family	Friends
Reason to travel	Visit family weather relax good experience last time	Visit family weather relax good experience last time	Weather relax good experience last time	Live an adventure, relax
Useful info	Family, the internet tourist office	The internet	Tourist office	The Internet (only weather)
Activities	Explore the city	Visit museums explore the city	Discover new places	Visit museums explore the city cruise
Typical food	Yes	Yes	Yes	Yes
Feelings	Happy	Very happy	Excited	Overwhelmed
Best memory	Beach	Villages	Walk across the beach	Amalfi coast, views
Worst Memory	No	No	Accomodation	Accomodation
Contac with family	No	Email	Sms	No
Share experience	Telling and show photos in live	Telling and show photos in live	Telling and show photos in live	Telling and show photos in live
Social networks	No	No	No	No

Table 9. Interview results. Round 1.

Second round

After having the first contact with our users and getting the first results, we interviewed 4 more people. We repeated the story board experiment and was followed the questionnaire questions. However, this time, the interviews were centrally focused on the best trip they have done. Moreover, a special emphasis has been laid in topics related to what facts or details they would change of their trip to improve it, or even to experiment an unique travelling experience.

As we commented above, in order to get more information, the interviews have lasted 1 hour approximately. Thanks to the ideas obtained in the first round, and due to the longer duration of these new interviews, it has been obtained new details, about their behavior as tourists. For example:

- One of the worst travelling experience, is to spend long hours at the airport.
- They like having the possibility to do different activities apart from, to visit the city, etc., such as, go to a spa at the hotel, etc.
- They really like to be surprised during the trip, due to, for example, to visit a beautiful and unknown place.
- Instead of doing some activities, they sometimes prefer just to sit in some place, enjoying the landscape.

Subsequently, with this new information, we made 4 new contexts, (*appendix1*) adding to the others scenes, in order to use these in the third round. Moreover, we fill in again the table of the previous point (*table 10*).

Destination	Sevilla	Lanzarote	Gran Canaria	La Palma
Days	12	10	7	7
Month	March 2012	March 2013	June 2012	Augost 2012
Travelers	Wife	Husband	Friends	Wife
First time	Yes	Yes	No	No
Destination choice	Family	Fiends	Friends	Friends
Reason to travel	Weather new cultures	Weather relax	Live an adventure, relax	Relax, love nature
Useful info	The internet	Friends	The Internet	The Internet
Activities	Visit museums explore the city	Discover new places	Explore the city cruise	Hiking
Typical food	Yes	Yes	Yes	Yes
Feelings	Romantic	Excited	Relaxed	Nostalgic
Best memory	Villages	Walk across the beach	Amalfi coast, views	Magic nature
Worst Memory	Airport	Airport	Airport	Airport
Contac with family	Call	Sms	No	Email
Share experience	Telling and show photos in live			
Social networks	No	No	No	Yes

Table 10. Interview results. Round 2.

Third round

In order to contrast the information obtained in the previous rounds, and to finalize this experiment, one more couple were interviewed.

As we commented above, in this case, we used the 4 new context, which we made after the last interviews.

Afterwards spending 1 hour discussing with them, we found out, that they shared similar opinions about like and dislikes regarding traveling. Since, outstanding information was not obtained, we consider that is not necessary to continue with the interviews. However we complete once again the table of the previous point (*table 11*).

Destination	Gran Canaria	Gran Canaria
Days	14	14
Month	June 2012	June 2012
Travelers	Wife	Husband
First time	No	No
Destination choice	Family	Family
Reason to travel	Weather relax good experience last time	Weather relax good experience last time
Useful info	The internet	The internet
Activities	Explore the city	Visit new places
Typical food	Yes	Yes
Feelings	Excited	Excited
Best memory	Sunset	Sunset
Worst Memory	Airport	No
Contact with family	Email	Email
Share experience	Telling and show photos in live	Telling and show photos in live
Social networks	No	No

Table 11. Interview results. Round 3.

Conclusions

Regarding the information collected from the interviews, it has been highlighted the common and more useful details. These conclusions are:

- Their favorite destination is Spain, concretely, Canary Islands.
- The most common reasons to travel are the weather, to be relaxed and disconnect of the conventional life.
- They usually travel with a partner, never alone.
- Depending on the place to visit, they prefer to travel with organised trip or by themselves.
- Most of them have visited more than once the same place, because they like to repeat good experiences in the same destination.
- The destination is, by and large, chosen thanks to friends or family recommendation.
- They mostly check some information before traveling, by the Internet.
- The main activities that they like to do in the destination, are walking around the visited places, to be in touch with another culture. However, they prefer to choose different activities.
- Their feelings and impressions in the destination, are different from each other, depending on the many factors, like the weather, the plane trip, the accompaniment, etc.
- During the trip, they contact with their relatives, once at least, usually by sms and email.
- Their best memory tends to be related to a beautiful place.
- Conversely, the reason of their worst memory, is the long time spent at airport, and sometimes the accommodation.
- All of them, tend to use the Internet, but just a few of them use social networks.
- The most common way to share their travelling experience, it is orally and sharing pictures, face to face.
- And finally, all of them agree about if they had changed some fact or detail about their trips, it would be the lack of time, since they would like to spend more time to visit places.

Summing up, thanks to the knowledge obtained in the different chapters and the new information collected at this point, we have considered that it has been acquired the enough knowledge to develop in the next point our interface idea.

8 Interface design

Chapter 8 focus on the interface design process, explaining its justification through a brief and the development of a scenario. Besides it has been developed different prototypes used for a total of five experiments to get final interface.

8.1. Design Brief

In order to provide a clear approximation about what we want to design, as well as, to provide the necessary information to develop the design process approximation, this point is based on a design brief.

1. Product.

Interface design for the retired tourists, to improve their travelling experiences.

2. Target.

The target of the project is composed of retired Norwegian tourists. This population is defined by some specific features, such as:

- They have one of the highest pensions compared to the rest of Europe (between 1.053 and 2040 €/month).
- After retirement, they keep an active attitude, for this reason, one of their favorite ways to spend their free time is traveling.
- The main reason to travel is to relax and enjoy good experiences.
- As for their relationship with new technologies, most of them daily, use the Internet. Moreover, it is increasing the use other technologies as mobile phones with internet access.
- However, it is necessary taking into account that, due to aging, older people suffer some disabilities, which hinder their relationship with new technologies.

3. Goals.

Through research and the use of different design tools, we want to design and interface, which helps to older people to improve or give a new point of view of their traveling experience.

This interface has to satisfy their desires and being adapted to their needs.

Summing up, the aim of the project consists of design a device, that must be useful for elderly, what's more, it has to accompany and help them during their trips. Additionally, we pretend to maximize the relation between them and new technologies, because we consider this population as an unexploited potential client, to design products and service.

8.2. Scenario

After explaining the brief of the project, the next point consists of describing the scenario, where the action will be developed.

On the last chapter, through the story board, were designed several contexts in order to understand the how older people, live their holidays.

Keeping in mind the results obtained after the story board experiment and the interviews, it is possible to create different scenarios, in which our users would feel identified. However, it has been chosen a specific one, that according to our point of view, it contains common situations but conversely, it hasn't been addressed as a design scenario.

Scenario description:

This context is based on three main features, which were common for the most interviewed people:

1. They travel more than once to the same place to relive good experiences. This means that, they know the destination, how to move there. Furthermore, the attitudes compared with the first time they visited the place is completely different. They feel, more confident and safer. Similarly, as we commented above, they want to repeat their last good experiences, however, they would like to do new activities and thus, feel new experiences.
2. Their behavior and state of mind suppose an interesting point, because the most of the interviewed people diverged in that fact. Elements as weather, the trip, the fellow traveler, etc influenced on their mood. Subsequently, this fact affected at the moment to choose to do an activity or another.
3. They may have access to the Internet.

Therefore, the chosen scenario is developed into a visited place. In this case, to be more specific, in a place of Spain, such as, Gran Canaria, because, is the most common destination by the interviewed.

Our user knows this place, because as we mentioned above, he has already visited it.

He would like to remember and go to some places, where he felt, good experiences. However he feels different, compared with the first time, he visited Gran Canaria, and he would like to do new activities, experience something new.

Summing up, our idea will help the user in the choice of several activities depending on his mood also allowing to differentiate between activities already done or not, having the possibility to repeat.

8.3. Prototypes

After we have selected the idea about what we are going to design, we start the prototyping process.

As we commented upon, at the end of the last point, the purpose of our application is to offer to user's several activities, which they can do during their trips, depending on where they are, and how they feel, i.e., their mood.

We established, different actions, which user will be able to do with the application.

- First of all, users have to register to use the application. That fact, will give them full access to the that.
- After, they have to confirm where they are.
- Then, they choose a mood, depending or how they feel.
- With those keys, the application proposes many activities for them.
- According to the results previously obtained, thanks to the interviews, Norwegian elderly like to repeat good experiences in the same places. For this reason, the application allows to the users to save the activity they choose, in order to check it more than once.

It is worth pointing out that usability and user-centred design are considered core competences at this application. Consequently, in order to design a good interface style, four users test were developed.

In each test, different prototypes were developed as tools used to study the interaction between the users and the interface. Moreover all the prototypes have been written in Norwegian language, because the interface is aimed to elderly Norwegian.

First User test

For the first user test, we designed a paper prototype formed by 39 pictures (*figure 14*). With this prototype, we try to identify interaction problems. Fortunately, we were able to develop this experiment with five people. During the experiment, we told them different task, and then they had to choose the right picture. Moreover, they had to interact with the paper, that's mean, to click on "screen", or "buttons", etc.

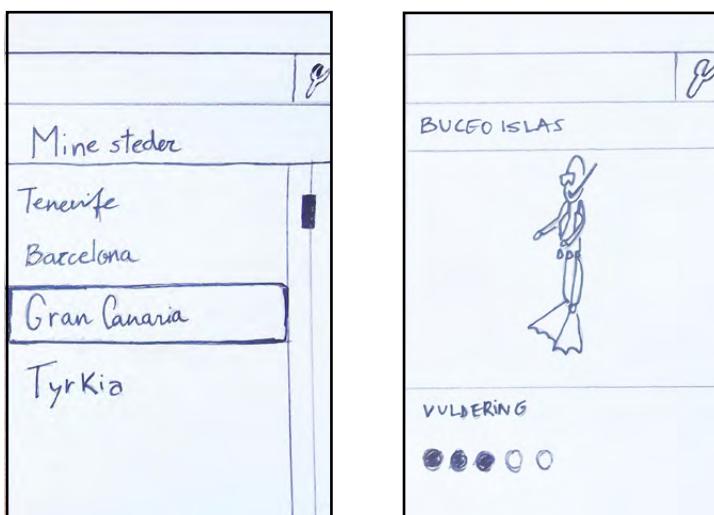


Figure 14. First prototype.

The tasks were the following ones:

1. Open the app “Moody”.
2. Login.
3. Complete the data.
4. Open mail.
5. Confirm account.
6. Go main page.
7. Click on button New Place.
8. Write new place (Gran canaria).
9. Click on button Next.
10. Write your mood.(Adventurer)
11. Click on button See all the moods. (Adventurer)
12. Choose a mood.
13. Click on button Next.
14. Click on the picture.
15. Click on button Map.
16. Click on button more zoom.
17. Click on button Step back (mobile phone).
18. Click on button Save.
19. Click on button Step back (mobile phone).
20. Click on button Next.
21. Click on button Options.
22. Click on button Home.
23. Click on button My places.
24. Choose a visited place (Gran canaria).
25. Click on button Delete.
26. Choose some places to delete.
27. Confirm delete.
28. Click on button first picture.
29. Rate the activity.
30. Click on button Step back (mobile phone).
31. Go rated pictures.
32. Click on button Delete.
33. Choose some activiries to delete.
34. Confirm delete.
35. Click on button Options.
36. Click on button Informarion.
37. Click on button Step back (mobile phone).
38. Click on button Options.
39. Click on button Logout.

Finally, it's worth pointing out that the people in this experiment are familiar with the use of Android phones and iPhones. However, we considered that this kind of technology is almost new for them. Consequently, the priority of the first design is the ease of use.

First user tests results.

During the experiment , we observed the different problems appeared at the moment to develop a specific task, and if they did it in a different way than expected.

- Most of them had some problems the moment to “click on a box to introduce some text”. They used to click on the title on the top of the white boxes.
- Another common outcome was, the interaction with the task about choosing an activity. In this picture, they could see an activity visualization and one button with the text “next” inside of it. The aim of this task, was to click on the activity to know more details about it. To get to the next screen, they had to click on the activity visualization, however all of them clicked on the “next” button, which aim is to go to a new activity.
- Another problem appeared at the moment to rate activities. The valuation was represented by five circles (one circle means the lowest mark, and five means the highest one). The problem was that they didn't understand the meaning of this performance.
- At the moment to choose the activities to delete, they confused the marked activities, which they should delete, with the activities that they didn't want to remove.
- Finally, afterwards choosing the activities to delete, they didn't know how to do to confirm the action.

Apart from the results obtained during the experiment, we asked them about details or functions, they would like to change or to add in order to improve their interaction with the interface. Their requests were:

- To include more information about the activities in order to make easier for the choice of each one.
- To have the possibility of checking some instructions about how to use the application.

Taking into account the results obtained, these details were improved at the next step.

Second User test

For the second test, we have designed a new prototype (*figure 15*), trying to

solve the problems of the first prototype. This time we have added the next elements:

- An optional tutorial, which will teach users how to use the interface.
- Differentiation between text box and icons
- Activities visualization has been changed. These are going to appear in a list. In addition, users have the possibility of reading real opinions about others, who have done the activity.
- The icon to rate the activity it has been replaced by another more intuitive.
- Similarly, besides to rate the activity, they can opine as well.
- In order to solve the problem related to remove activities or places, it was designed a new button to confirm this action.



Figure 15. Second prototype.

Afterwards finishing the second prototype, a new experiment was made. However, this time, three people took part in the experiment.

Moreover, in order to know if the application performance is intuitive and easy to use for them, we propose them to develop a task, which they have to solve without our intervention.

That task consisted of choosing and specific activity according with a concrete place and mood.

Then, they have to rate this activity. Finally it's worth pointing out that only one of them, had the option to see the instructions.

Second User test results

Successfully, all the problems detected in the first experiment were solved. However new ones have appeared in the second experiment. As we comment-

ed above the new individuals had to do and specific task and only one of them was able to check the instructions.

The main conclusions were:

- The only problem that the person with the instructions had, it was related to the icon to forward and back during the reading of such instructions. Nevertheless, afterwards following the tutorial, he solved the task successfully.
- On the other hand, the difficulties that the others had, it was to specify their mood. To complete these actions users have two possibilities: to write their mood or to choose one from a list. All of them preferred to choose one of that list because they were not able to imagine a specific mood at that moment.
- Moreover the removing icon, is still confused for them.

Similarly, we did at the end of the first experiment, we ask them for their opinion and details to make the application better. Two of them said to us, that when they had to decide where to go during trips, they like to see many pictures of the destination, to get an idea about what they will do. Then we try to make some changes in our prototype for the third experiment.

Third User test

For the third experiment, we try to design a new prototype, (*figure 16*) which can be the final one. We have solved the main points related to with the application performance and it has been included more media elements for each activity. This time we have focused on the interface style, such as, typographies, colours, icons, etc.

It is worth pointing out that, it took into account one of the most used guides in the web site design for older people, published by the *National Institute on Aging* and the *National Library of Medicine*. It contains 25 guidelines related to the online text legibility, the information presentation, media elements and the ease of navigation.

As for the experiment, this time 2 people have participated in it. They had to do the same tasks of the last experiment. However, as we commented above, the style of the new interface is quite different than the previous one. We have included colours, new icons etc.

The main colour of the application, is the Pantone 134-C.

We have been inspired in the wine colour, because we want to transmit to our users the idea of elegance and serenity.

In order to not confuse users, the colour of the background Pantone 9060. Finally, the color of the main buttons and the text, is the Pantone DS 325-2C to allow to identify it, easily.



Figure 16. Third prototype.

Third User test results.

As we expected, in this experiment the users, didn't have problems about how to develop the tasks. Only one doubt appeared at the moment to choose a visited place to check the activities of that trip. The doubt consisted of they didn't know how to differentiate between several trips from the same destination.

As for, the new style they agreed with the typography, element's distribution and colours. However they took long time to identify the main screen of the app shown above.

Then for the next experiment, we improve again the interface, which is going to be shown to the people of the first experiment.

Nia Guidelines	
Typeface	Use a sans serif typeface. Avoid the use of serif, novelty, and display typefaces.
Type c	Use 12 point or 14 point type size for body text.
Type Weight	Use medium or bold face type.
Capital and Lowercase Letters	Present body text in upper and lowercase letters. Use all capital letters and italics in headlines only. Reserve underlining for links.

Nia Guidelines	
Physical Spacing	Double space all body text.
Justification	There are three ways to justify type: left, full, or center justified. Left justified text is optimal for older adults.
Color	Avoid yellow and blue and green in close proximity. These colors and juxtapositions are difficult for some older adults to discriminate.
Backgrounds	Use dark type or graphics against a light background, or white lettering on a black or dark-colored background. Avoid patterned backgrounds.
Style	Present information in a clear and familiar way to reduce the number of inferences that must be made. Use positive statements.
Phrasing	Use the active voice.
Simplicity	Write the text in simple language. Provide an online glossary of technical terms.
Organization	Organize the content in a standard format. Break lengthy documents into short sections.
Illustrations and Photographs	Use text-relevant images only.
Animation, Video and Audio	Use short segments to reduce download time.
Text Alternatives	Provide text alternatives such as open-captioning or access to a static version of the text for all animation, video, and audio.

Nia Guidelines	
Navigation	The organization of the web site should be simple and straightforward. Use explicit step-by-step navigation procedures whenever possible to ensure that people understand what follows next. Carefully label links.
The Mouse	Use single mouse clicks to access information.
Consistent Layout	Use a standard page design and the same symbols and icons throughout. Use the same set of navigation buttons in the same place on each page to move from one web page or section of the web site to another.
Style and Size of Icons and Buttons	Incorporate text with the icon if possible, and use large buttons that do not require precise mouse movements for activation.
Menus	Use pull down menus sparingly.
Scrolling	Avoid automatically scrolling text. If manual scrolling is required, incorporate specific scrolling icons on each page.
Backward / Forward Navigation	Incorporate buttons such as Previous Page and Next Page to allow the reader to review or move forward.
Site Maps	Provide a site map to show how the site is organized.
Hyperlinks	Use icons with text as hyperlinks.
Help and Information	Offer a telephone number for those who would prefer to talk to a person or provide an e-mail address for questions or comments.

Table 12. NIA guidelines. National Institute on Aging.

Fourth User test

For this experiment, we have replaced, the paper prototypes by a flash document (*appendix 2*). The people that will take part in this new experiment, they will be able to interact with the interface, simulating their interaction with the real application.

As for, the problem to differentiate the different trips in the same place, we have included the date when the trip was done. Moreover we have changed the main page of the interface replacing the previous one by a background with just one colour.

Fourth User test results

As we commented above, a flash document has been used as a tool in this experiment. That prototype, has been designed to simulate as much as possible a real application for a mobile phone. However users can specific tasks. That's mean, they only can choose one destination, one mood and one activity. Nevertheless it was enough, because we have managed our goal. Our three users hadn't any problem during the experiment, so they were able to use the application successfully. Nevertheless, to make sure about our interface design, we are going to develop one more experiment.

Eye tracker test

The aim of the last test is to confirm the right design of the interface.

For this experiment it has been used two different tools. The first one is the flash document, used in the last test. The second one are a special glasses called *Eye Tracker*. Thanks to this tool, it is possible to know what someone is looking at, accurately.

The experiment it was developed by two people.

First of all, we calibrate the glasses for each one, with a software called *Eye-Vision* (*figure 17*). Then we show them the interface, and they have to interact with it.

Eye tracker test results

The obtained results were really interesting:

- With the first pictures, they looked at all the elements on the screen, such as buttons, icons, the mobile phone shape, etc. However after 8 or 9 pictures, they focused their attention in the middle of the screen (*figure 18*), forgetting the secondary elements.
- Successfully, they spent a short time to localize and interact with “less intuitive buttons”, which are the menu icon and the trash bin icon.
- Finally it's worth pointing out that the more time they spent interacting with the application, the more confident they felt.

Then, after the experiments, and the implemented changes in the interface, we can confirm that we have achieved our project goal.

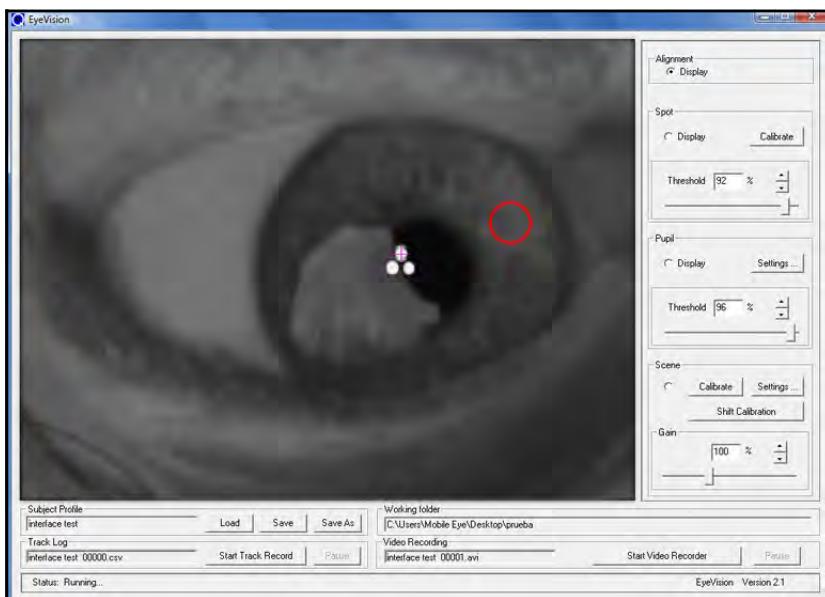


Figure 17. Eye Tracker configuration.

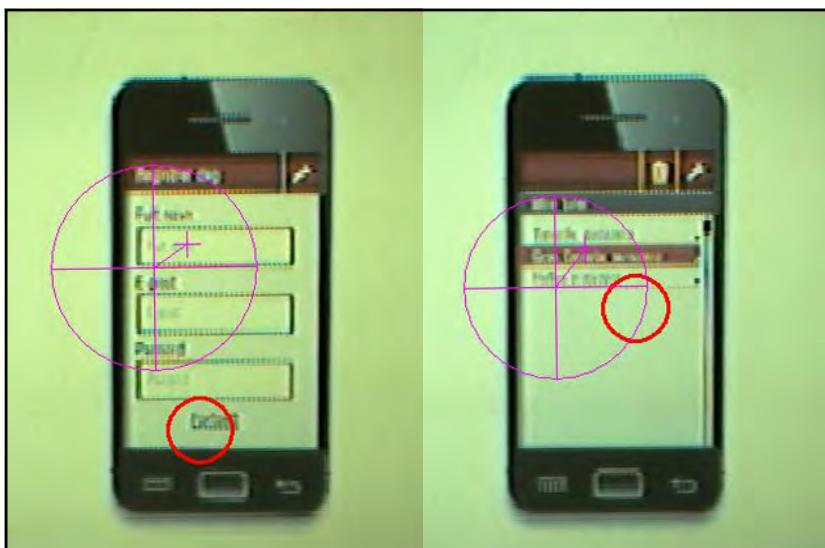


Figure 18. Eye Tracker experiment.

9 Conclusions

Once the application has been designed, we shall review the goals proposed at the beginning of the project.

The main aim was designing a device to help retired Norwegian tourist during their vacations, giving them, facilities to get a pleasant experience. For this, it has been studied the relationship between three concepts getting the next conclusions.

In Norway, the elderly has one of the highest pensions in Europe for this reason they are potential customers for several market sectors. Concretely for the Tourism, which obtains more benefits in all the world, because that is one of the most favorite activities to spend their free time. Similarly, older people are an essential element of this market due to, on the opposite side that the rest of the population, they travel at any time of the year.

As for the new technologies, it has been an important tool for tourism marketing. The Internet allows customers to be in touch with much information about destinations, offers, tourism agencies, etc. Moreover, it has been one of the most important elements, which influence on the customer behavior, due to according to the results obtained during the development of this project, both older people and the rest of the population, resort to the Internet before to take a decision related to traveling or not.

Even though the relationship between older people and new technologies is improving, there is still an exclusion of them, due to two main reasons. On one hand, the general thought (even among older people), about that the Internet is only focused on young people. On the other hand, there is an idea related to the creation of adapting website, mobile applications, etc, that is a major effort for designers.

Fortunately, this fact is changing. The use of new technologies among older people continue increasing. More than 80% of the elderly Norwegian have the Internet at home, and the use of Smart phones although, the percentage is still small, it is increasing over the years. For this reason, we expect to improve the travelling experience of the elderly Norwegian, and bring them to the new technologies, through the design of adapted interfaces like ours.

Finally, I would like to emphasize as a designer the importance to know the target who we are designing for. All the meetings and experiments made by real people during the project development, it has been the key to complete the project successfully.

10 Bibliography

Ferré Grau, X. (2010). Principios básicos de usabilidad para ingenieros software. *Nueva Publicación de Prueba*, 1(1), 8.

Li110, J., & Moreira, H. (2004). Envejecimiento y diseño universal. *Anuario de psicología*, 35(493-506).

Wobbrock, J. O., Kane, S. K., Gajos, K. Z., Harada, S., & Froehlich, J. (2011). Ability-based design: Concept, principles and examples. *ACM Transactions on Accessible Computing (TACCESS)*, 3(3), 9.

Portet, F., Vacher, M., Golanski, C., Roux, C., & Meillon, B. (2013). Design and evaluation of a smart home voice interface for the elderly: acceptability and objection aspects. *Personal and Ubiquitous Computing*, 17(1), 127-144.

Campillo Pérez, A. (2010). Usabilidad de sitios web para personas de la tercera edad.

Torres Barzabal, L., & Ballesteros Regaña, C. (2005). Personas mayores, educación y web accesibles. In *V Congreso Internacional Virtual de Educación*.

Cruz, R. A. P. P. D., García Peñalvo, F. J., & Alonso Romero, L. (2003). *Perfiles de usuario: En la senda de la personalización*.

Sanders, E. B. N. (2006). Scaffolds for building everyday creativity. *Design for Effective Communications: Creating Contexts for Clarity and Meaning*.

Demirbilek, O., & Demirkhan, H. (2004). *Universal product design involving elderly users: a participatory design model*. *Applied Ergonomics*, 35(4), 361-370.

Buxton B. (2010). *Sketching User Experiences: Getting the Design Right and the Right Design*. US: San Francisco.

Panza Cajamarca, M. I. (2012). *Diseño de un website sobre los lugares turísticos de la provincia del Cañar*.

Del Valle, P., Aragüés, A., Escayola, J., Martínez, I., & García, J. *Propuesta de Diseño de un Entorno Gráfico e-Accesible según la norma ISO 9241 e interoperable según la norma ISO/IEEE 11073 para soluciones de e-Salud*.

Sainz de Salces, F., Franco Álvarez, G., & Borondo Cobo, A. (2009). *Desarrollo y aplicación de una bitácora para la publicación y comunicación de contenidos en la red orientada a personas de la tercera edad*.

Rojas, E. Z., Rivera, A. M., Guzmán, S. C., & Correa, C. R. *Externalizando el diseño del servicio turístico en los clientes: teoría y un caso de chile.*

Tramullas, J. (2004). *El diseño centrado en el usuario para la creación de productos y servicios de información digital.* Revista iberoamericana sobre usuarios de información Forinf@ Online.

Portet, F., Vacher, M., Golanski, C., Roux, C., & Meillon, B. (2013). *Design and evaluation of a smart home voice interface for the elderly: acceptability and objection aspects.* Personal and Ubiquitous Computing, 17(1), 127-144.

Montero, M., & Jesús, M. (1992). *Las vacaciones de la Tercera Edad: Un tipo específico de Turismo.* Cuadernos de geografía, (51), 111-124.

Armadans, I., Sopena, J. M., Pol, E., & en la Tercera Edad, O. *Ocio- Turístico de la gente amyor y redes neuronales.*

Hoyo, M., & Valiente, C. (2010). *Turismo accesible, turismo para todos: la situación en Cataluña y España.* Cuadernos de Turismo, 35, 25.

Wallingre, N. El turismo social. *Una alternativa para la realización de la tercera edad.*

El ocio, E. L. N., & Disponibilidades Y. (2002). *La complementariedad entre el comercio y el turismo en la nueva economía del ocio.*

Patterson, I. (2007). *Information sources used by older adults for decision making about tourist and travel destinations.* International Journal of Consumer Studies, 31(5), 528-533.

Casado, R., Serrano, J. A., Gonzalez, M. A., de la Fuente, P., Ramos, J., de la Materia, D. D. F., & de Ingenieros, C. E. T. S. (1999). *Sistema de información turística.* In *TuriTec'99: I Congreso Nacional Turismo y Tecnologías de la Información y las Comunicaciones: Nuevas Tecnologías y Calidad* (pp. 159-179). Centro de Ediciones de la Diputación de Málaga (CEDMA).

Gaymer, M., Bello, R., & Clark, X. (2012). *Informe final programa vacaciones tercera edad y giras de estudio.*

González, J. A. M. (2011). *Factores Que Influyen En El Comportamiento De Compra Del Turista.* Turismo y Desarrollo Local, (9).

Therón, R., García, F. J., Moreno, Á. M., Gil, A. B., Curto, B., & García, J. (2001). WebTE: servicios integrados para la tercera edad basados en la web.

Molina, A., Gómez, M., & Martín-Consuegra, D. (2010). *Tourism marketing information and destination image management*. African Journal of Business Management, 4(5), 722-728.

Del Valle, P., Aragüés, A., Escayola, J., Martínez, I., & García, J. *Propuesta de Diseño de un Entorno Gráfico e-Accesible según la norma ISO 9241 e interoperable según la norma ISO/IEEE 11073 para soluciones de e-Salud*

Sainz de Salces, F., Franco Álvarez, G., & Borondo Cobo, A. (2009). *Desarrollo y aplicación de una bitácora para la publicación y comunicación de contenidos en la red orientada a personas de la tercera edad*.

Sancho, A., & Buhalis, D. (1998). *Introducción al turismo*. Madrid: Organización Mundial del Turismo.

Morales Indias, A. (2009). *Implementación de un sistema de notificación para dispositivos móviles orientado a usuarios de la tercera edad con uso de multimedia*.

Rodríguez, B., & El Rayah, M. (2009). *Desarrollo de una interfaz para personas de la tercera edad: rede social de compartición de contenidos*.

González, M. E. A., Vila, T. D., & García, A. F. (2010). *El turismo senior como segmento de mercado emergente*. Cuadernos de Turismo, 26(26), 9-24.

Guinn, R. (1980). *Elderly recreational vehicle tourists: Motivations for leisure*. Journal of Travel Research, 19(1), 9-12.

Shoemaker, S. (1989). *Segmentation of the senior pleasure travel market*. Journal of Travel Research, 27(3), 14-21.

Patterson, I. R. (2006). *Growing older: Tourism and leisure behaviour of older adults*. Cabi.

Romsa, G., & Blenman, M. (1989). *Vacation patterns of the elderly German*. Annals of Tourism Research, 16(2), 178-188.

Prebensen, N. K. (2005). *Country as Destination—Norwegian Tourists' Perceptions and Motivation*. Journal of Hospitality & Leisure Marketing, 12(3), 63-85.

Haug, B., Dann, G., & Mehmetoglu, M. (2007). *Little Norway in Spain: From tourism to migration*. Annals of Tourism Research, 34(1), 202-222.

- Myklebost, H. (1989). *Migration of elderly Norwegians*.
- Pizam, A., & Sussmann, S. (1995). *Does nationality affect tourist behavior?* *Annals of Tourism Research*, 22(4), 901-917.
- Borchgrevink, C. P., & Knutson, B. J. (1997). *Norway seen from abroad: Perceptions of Norway and Norwegian tourism: An image study*. *Journal of Hospitality & Leisure Marketing*, 4(4), 25-46.
- Dann, G. M. (2004). *Tourism imagery research in Norway: classification, evaluation and projection*. *Scandinavian Journal of Hospitality and Tourism*, 4(3), 191-207.
- China, O. E. C. D. Pensions at a glance 2011: *Retirement-income systems in OECD countries*. Age, 12, 23-6.
- Dalen, E. (1989). *Research into values and consumer trends in Norway*. *Tourism Management*, 10(3), 183-186.
- Torrecilla, J. M. (1999). *Identificar la necesidad del cliente: su satisfacción como centro de los objetivos de la empresa*. Economía industrial, (330), 101-112.
- Carone, G., & Costello, D. (2006). *¿Llega Europa a la tercera edad?: la UE debe tomar en serio las proyecciones recientes que indican que el envejecimiento de la población tendrá un gran impacto económico y presupuestario*. Finanzas y desarrollo: publicación trimestral del Fondo Monetario Internacional y del Banco Mundial, 43(3), 28-31.
- Moggridge, B. (1993). *Design by story-telling*. Applied Ergonomics, 24(1), 15-18.
- Binkhorst, E. (2008). *Turismo de co-creación, valor añadido en escenarios turísticos*. *Journal of Tourism Research*, 1, 40-51.
- Álvarez Sousa, A., Rego Veiga, G., Leira López, J., Rodríguez, G., Caramés Valo, R., & Andrade Suárez, M. J. (2008). *Innovación turística: perspectivas teóricas y objetos de estudio*.
- Valadez Sánchez, P., & Molero Zayas, J. (2005). *Factores determinantes de la competitividad de los servicios: la importancia de la innovación*. Información Comercial Española, ICE: Revista de economía, (824), 71-91.
- Tamayo, B. (1997). *Las agencias de viajes frente a las nuevas tecnologías de distribución turística*. Cotec.

Binkhorst, E., & Den Dekker, T. (2009). *Agenda for co-creation tourism experience research. Journal of Hospitality Marketing & Management*, 18(2-3), 311-327.

Alcañiz, J. E. B., & Simó, L. A. *Influencias personales en las emociones del consumidor: una aplicación a servicios de ocio turismo.*

Sánchez, A. M., Lanquar, R., & Martí, F. P. *Los efectos de la innovación tecnológica en el turismo.*

Jacob, M. (2004). *Pautas de innovación en el sector turístico balear.* Madrid: Cotec.

Arroyo, R. (2012). *La sociedad de ensueño del turismo. Anuario Turismo y Sociedad*, 12.

Vilaseca Requena, J., Torrent Sellens, J., Lladós Masllorens, J., & Garay Tamajón, L. (2007). *Tecnologías de la información y comunicación, innovación y actividad turística: hacia la empresa en red.* Cuadernos de Turismo, (19).

Eckersley, M. D. (2008). *Designing Human Centered Services. Design Management Review*, 19(1), 59-65.

De Vista, P. U. N. T. O. (2001). *Diseño de servicios para personas mayores. El caso de una residencia para la tercera edad.* Rev Esp Geriatr Gerontol, 36(6), 331-339.

Tramullas, J. (2004). *El diseño centrado en el usuario para la creación de productos y servicios de información digital.* Revista iberoamericana sobre usuarios de información Forinf@ Online.

Gloppen, J. *Perspectives on design leadership and design thinking in the service industry.*

Sanders, E. B. N., & Stappers, P. J. (2008). *Co-creation and the new landscapes of design. Co-design*, 4(1), 5-18.

Tamayo, B. (1999). *Nuevos campos para la innovación: Internet y el comercio electrónico de bienes y servicios.* Cotec.

Erl, T. (2008). *Soa: principles of service design (Vol. 1).* Upper Saddle River: Prentice Hall.

Stickdorn, M., & Schneider, J. (2010). *This is service design thinking: Basics--tools-cases.* BIS Publishers.

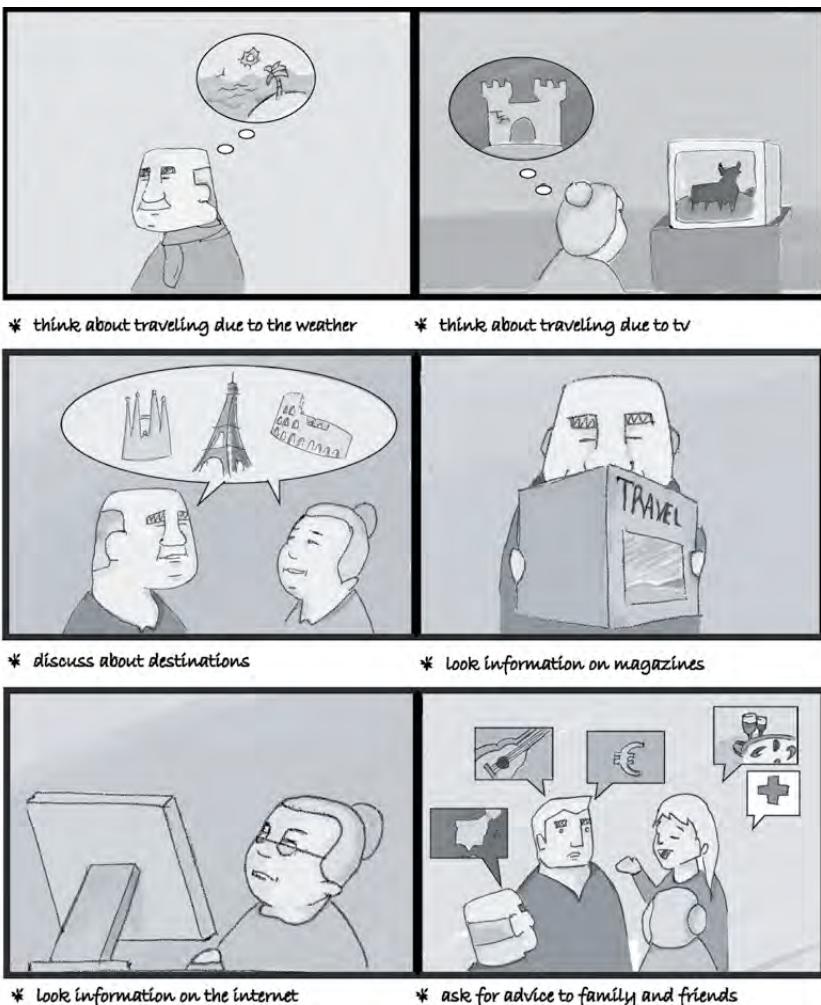
Angulo, D., & Araque, E. (2012). *Vivir más Diseño de una Revista Para la Tercera Edad.*

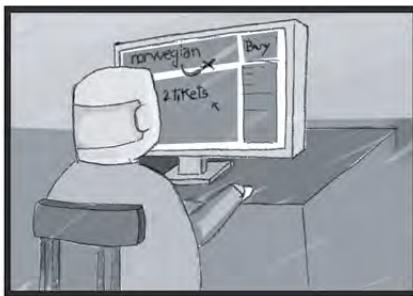
- Bedolla, D., Lloveras, J., & Gil, J. (2004, October). *Diseño Sensorial: Modelos guía para la concepción de productos industriales más humanizados*. In Ejemplos. Libro de Actas. VIII Congreso Internacional de Ingeniería de Proyectos Bilbao (pp. 6-8)
- Angulo, D., & Araque, E. (2012). *Vivir más Diseño de una Revista Para la Tercera Edad*.
- Schreier, M. (2003). *Value Creation by Toolkits for User Innovation and Design*. In Proceedings: 2nd Interdisciplinary World Congress on Mass Customization and Personalization. Munich.
- Kiel, J. M. (2005). *The digital divide: Internet and e-mail use by the elderly*. *Informatics for Health and Social Care*, 30(1), 19-23.
- Pecino, R. M., Lera, M. J., & Martinez-Pecino, M. (2012). *Active seniors and mobile phone interaction*. *Social Behavior and Personality: an international journal*, 40(5), 875-880.
- Lar, A. H., Göktürk, G. Y., Tura, G., & Kazaz, N. (2012). *Is the Internet Use an Effective Method to Cope With Elderly Loneliness and Decrease Loneliness Symptom?*. Procedia-Social and Behavioral Sciences, 55, 1053-1059.
- Nysveen, H., & Lexhagen, M. (2001). *Swedish and Norwegian tourism websites: The importance of reservation services and value-added services*. *Scandinavian Journal of Hospitality and Tourism*, 1(1), 38-53.
- Gallardo, R. M. (1991). *Animación sociocultural de la vida diaria en la tercera edad*. Servicio Central de Publicaciones del Gobierno Vasco.
- Fernández Alles, M. T. (2012). *Los consumidores de la tercera edad y el diseño universal*. Boletín económico de ICE, Información Comercial Española, (3026), 45-55.
- Spool, J. M. (1999). *Web site usability: a designer's guide*. Morgan Kaufmann Pub.
- Holden, A. (2004). *Tourism studies and the social sciences*. Routledge.
- Vander Veer, E. (2011). *Facebook: the missing manual*. Pogue Press.
- Lindholm, C., & Keinonen, T. (2003). *Mobile Usability: How Nokia Changed the Face of the Cellular Phone*. McGraw-Hill, Inc..

11 Appendix

Appendix 1. Storyboard

The appendix one contains, the storyboard (*figure 19*), used during the interviews in the user research stage.





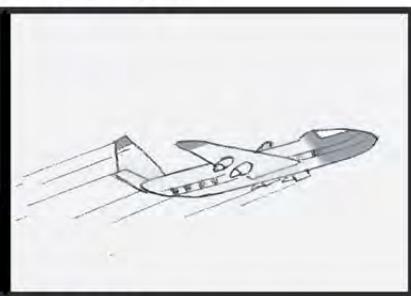
* book tickets



* prepare the luggage



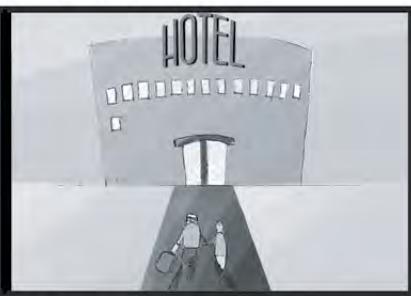
* go to the airport



* take the plane



* what to do when you arrive at your destination



* go to your accomodation



* visit relatives/friends

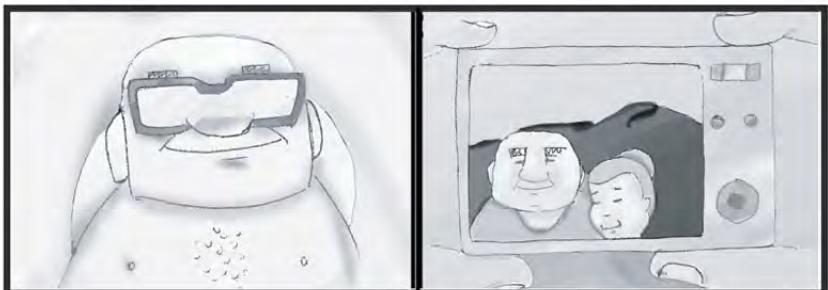


* keep in touch with relatives friends



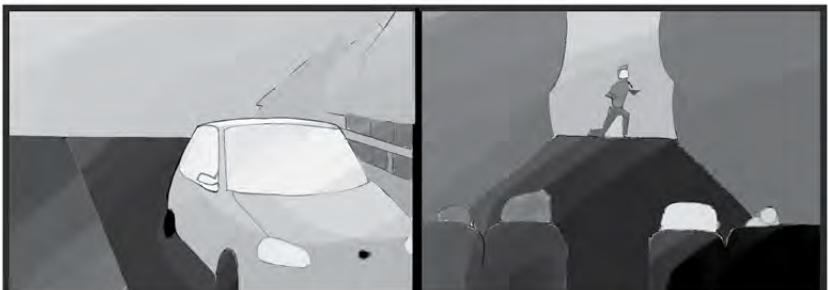
* taste typical food from the destination

* visit monuments taking photos



* rest

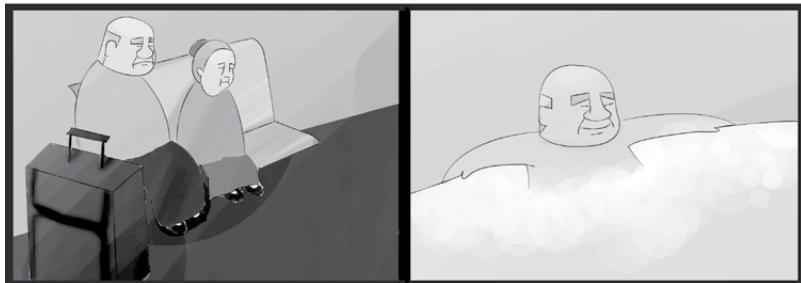
* visit famous places



* rent a car

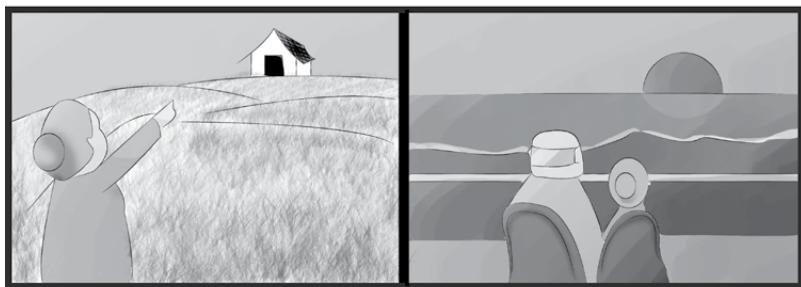
* go to the theatre cinema





* wait at the airport

* hotel activities



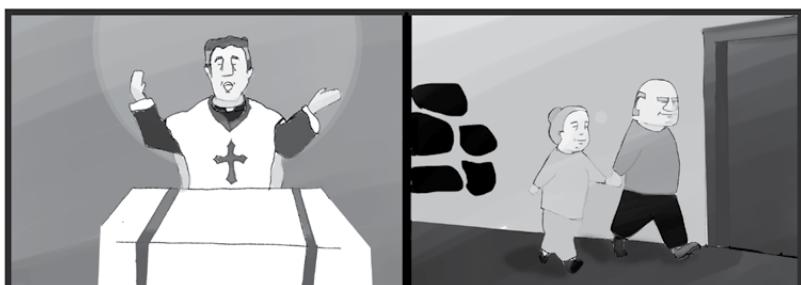
* visit unknown places

* relax enjoying the landscape



* meet people from your own country

* interact with people of the destination



* go to the church

* go for a walk



Figure 19. Storyboard

Appendix 2. Interface

This appendix contains, all the screens that compose the final interface proposal (*figure 20*).

Main page

This page allows users three main actions, create an account, log in, or to get a new password.

Sing in pages

When the users choose to create an account to use the application, they have to follow a process, which consist of introducing some information about themselves, and to confirm the registration over the email.

Instructions pages

After registration, the user has the option to check an intructions about how to use the applications. Conversely, the user can skip these and start to use the app.

Home page

Afterwards following the instructions, and every time the user login, this page will be the home page where they can choose between, to start a new trip, or to check previous trips.

Choose a destination page

After choosing, “new trip”, the users have to establish where they are.

Choose a mood page

The next step consists of selecting a mood according to how the users feel .

Choose an activity page

Once it is established, the destination and the mood, the app proposes the users, several activities. When they choose one, they can check more information about it, like pictures and videos, other users opinions or maps.

My trips page

When the users save the activity, they can check it more than once. First of all, they choose the destination that they prefer.

My Activities page

Then, they click on some activity to watch it again. Moreover, they have now the possibility of value the activity and give their opinion about it.

Delete pages

The users may remove any trip and activity that they want allows users three main actions, create an account, log in, or to get a new password.

Menu page

There is a menu to access in every moment to the home page, the information page or just log out.

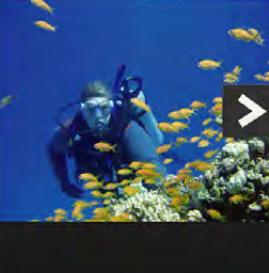
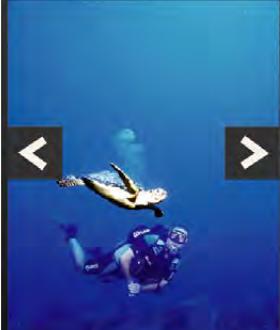
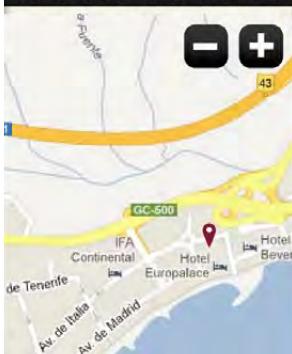
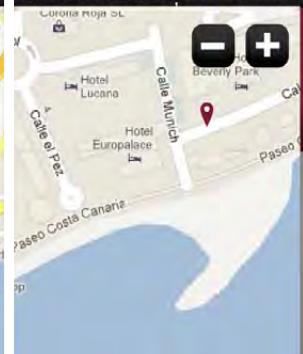
New password page

Finally, If the users forget they password, they have the possibility to obtain a new one.

<p>Instruksjoner</p> <p>For å legge til ditt sinnsstemning du må klikke Se alle sinnstemninger for å velge den sinnsstemming du ønsker.</p> <p>Jeg føler...</p> <p></p>	<p>Instruksjoner</p> <p>Hvordan føler du deg?</p> <p>Eventyrer Glad Kjedelig Engstelig Nysgjerrig Spent Stresset</p> <p></p>	<p>Instruksjoner</p> <p>Etter kikk på Neste.</p> <p>Jeg føler... Eventyrer</p> <p></p>
<p>Instruksjoner</p> <p>Klikk på din favorittaktivitet.</p> <p></p> <p>Utforsk havbunnen men Buceo Islas</p> <p>Erobr toppen av Roque Nublo</p> <p>Bla i jakten på delfiner</p> <p>Gå blant vulk</p>	<p>Instruksjoner</p> <p>Du kan lese flere detaljer om det, slik oss, bilder og videoer folk Annenderliser eller Karter.</p> <p></p> <p></p> <p>Anmeldelser</p> <p>Kart</p>	<p>Instruksjoner</p> <p>Hvis du liker aktiviteten, trenger du bare å klikke på knappen Lagre</p> <p></p> <p>Lagre</p>
<p>Instruksjoner</p> <p>Hvis ikke, kan du gå tilbake til aktivitetstlisten velge en annen.</p> <p></p> <p>Erobr toppen av Roque Nublo</p> <p>Bla i jakten på delfiner</p> <p>Gå blant vulk</p>	<p>Instruksjoner</p> <p>Hvis du har lagret aktiviteten, vil du kunne få tilgang til den gjennom alternativet Mine turer.</p> <p></p> <p>Ny tur</p> <p>Mine turer</p>	<p>Instruksjoner</p> <p>Velg stedet hvor du var.</p> <p>Tenerife 03/03/2013</p> <p>Barcelona 08/16/2012</p> <p>Gran Canaria 01/03/2012</p> <p>Grecia 15/01/2012</p> <p>Turkia 16/08/2011</p> <p></p>

Instruksjoner		Instruksjoner		Instruksjoner	
Klikk deretter på den aktiviteten du ønsker å sjekke.	Dessuten har du et nytt alternativ som lar deg evaluere og rangere denne aktiviteten.	Klikk først på stjernene for å vurdere.			
Klikk på boksen for å skriv anmeldelsen din. Ved å dele dine erfaringer, hjelper du andre reisende med å ta bedre valg.	Klikk til slutt på knappen Lagre , for å lagre anmeldelsen din.	Din vurdering skal vises på aktiviteten miniatyrbilde.			
Hvis du vil slette et sted eller en aktivitet, klikker du bare på papirkurven	Velger det du vil slette.	Klikk igjen på Slett .			

<p>Instruksjoner </p> <p>Og bekrefter operasjonen.</p>	<p>Instruksjoner </p> <p>Til slutt må du huske at du kan gå inn på alternativmenyen i øvre høyre hjørne av skjermen.</p>	<p>Instruksjoner </p> <p>Denne menyen vil tillate deg å gå tilbake til starten av programmet, logge ut eller få mer informasjon om dette programmet.</p>
<p>Instruksjoner </p> <p><u>Nyt turen med Moody !!</u></p> <p><u>Lukk instruksjonene</u></p>	<p> Ny tur</p> <p> Mine turer</p>	<p>Hvordan er du?</p> <p>Jeg er i...</p> <p>Skriv stedsnavnnavn</p> <p> Neste</p>
<p>Hvordan er du?</p> <p>Jeg er i...</p> <p>Gran Canaria</p> <p> Neste</p>	<p>Hvordan føler du deg?</p> <p>Jeg føler...</p> <p> Se alle sinnsstemninger</p> <p> Neste</p>	<p>Hvordan føler du deg?</p> <p>Engstelig</p> <p>Eventyrlig</p> <p>Glad</p> <p>Kjedelig</p> <p>Nostalgisk</p> <p>Nysgjerrig</p> <p>Nervøs</p> <p>Sulten</p> <p>Spent</p> <p>Stresset</p>

<h3>Hvordan føler du deg?</h3> <p>Jeg føler...</p> <input type="text" value="Eventyr"/> <p> Neste</p>	<h3>Hva vil du gjøre?</h3> <ul style="list-style-type: none"> Utforsk havbunnen men Buceo Islas Erobr toppen av Roque Nublo Bla i jakten på delfiner Gå blant vulk 	<h3>Buceo Islas</h3>   <p> Anmeldelser</p> <p> Kart</p> <p> Lagre</p>
<h3>Buceo Islas</h3>  <p> </p>	<h3>Buceo Islas</h3>  <p> </p>	<h3>Buceo Islas</h3>  <p> </p>
<h3>35130 Puerto Rico, Gran Canaria</h3>  <p> 43</p>	<h3>35130 Puerto Rico, Gran Canaria</h3>  <p> </p>	<h3>Buceo Islas</h3>   <p> Kevin & Nina går ut av sitt gode skinn for å behandle kundene som enkeltpersoner, aldri pressuring, prøver bare å sørge for at du får det beste ut av ferien din, dykking og marine liv på Kanariøyene.</p>

<p></p> <p>Profesjonell og vennlig og trygt. prøver alltid å gi hver dykker et virkelig bra dykk i henhold til deres nivå. En av mine favoritt dykking butikk! Jonas</p> <hr/> <p></p> <p>Fantastisk 5-stjerners PADI Senter Utmerket dykking, vennlig atmosfære, veldig hjelpsomme, passer for alle nivåer av dykker. Strålende emnet blir det.</p>	Hjem Logg ut Informasjon Anmeldelser Kart Lagre	<p>Mine turer</p> <p>Tenerife 03/03/2013 Gran Canaria 08/16/2012 Hellas 01/03/2012 Barcelona 15/01/2012 Gran Canaria 16/08/2011</p>										
<p></p>	<p>Buceo Islas</p> Anmeldelser Kart Anmeldelsen din	<p></p> <p>Buceo Islas 35130 Puerto Rico Gran Canaria</p> <p>Vurdering</p> <p>Anmeldelsen din</p> <p>Skriv en anmeldelse</p> Lagre										
<p></p>	<p>Mine turer</p> <p>Tenerife 03/03/2013 Gran Canaria 08/16/2012 Hellas 01/03/2012 Barcelona 15/01/2012 Gran Canaria 16/08/2011</p>	<p> Slett</p> <p>Vil du slette disse elementer ?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Nei</td> <td style="padding: 5px;">Ja</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><input type="checkbox"/> Gran Canaria 08/16/2012</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><input type="checkbox"/> Hellas 01/03/2012</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><input checked="" type="checkbox"/> Barcelona 15/01/2012</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"><input checked="" type="checkbox"/> Gran Canaria 16/08/2011</td> </tr> </table>	Nei	Ja	<input type="checkbox"/> Gran Canaria 08/16/2012		<input type="checkbox"/> Hellas 01/03/2012		<input checked="" type="checkbox"/> Barcelona 15/01/2012		<input checked="" type="checkbox"/> Gran Canaria 16/08/2011	
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      	Vil du slette disse elementer ? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Nei</td> <td style="text-align: center;">Ja</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>		Nei	Ja							Informasjon  Hjelpe <hr/>  Policy for informasjonskapsler <hr/>  Kontakt
Nei	Ja										
											
											
											
Vil du logge ut ? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Nei</td> <td style="text-align: center;">Ja</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>			Nei	Ja					Har du gløymt passordet ditt? Nytt passord <input type="text" value="Skrive et nytt passord"/> Bekreft passordet <input type="text" value="Skriver du passordet"/>		Har du gløymt passordet ditt? <p>Du har endret passordet !</p> <p><u>Tilbake til hjem</u></p>
Nei	Ja										
											
											
			<u>Fortsett</u>								

Figure 20. Interface

