Communication and Information Sharing For Elderly

Project 3
Interaction Design

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Interaction Design | Project 3
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The Interaction Design Project III entitled,
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Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/ source in my submission.

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Contents

Prologue

- Who are called Elderly?
- Does age decide if one is old or not?
- What are the chronological factors which affect the elderly?
- What are the factors influencing life of an elderly and how do these factors affect the overall living?
- What are the various dimensions, which if integrated would connect to the quality of life among elderly?
- What is the role of the society in the life elderly and what impact is it causing on their lifestyle?

Such questions and lot more, crossed my mind when talking of the elderly people in our society. Notions and views vary from person to person about elderly population. They are the connecting links to our past and future. It's not the age that differentiates them with rest of the age groups. It's more about understanding them and their needs and also social insecurities that they possess.

Technology interventions in the area of personal communication and information exchange have caused an enormous social change.

Interpersonal communication within the elderly, is not only the source of keeping them connected with their peer group but also enhances the direct personal relationships.

Abstract

Information and communication technology has not only affected the younger generation but it is also pervading and finding its way into the lives of elderly. With the growth of mobile phones, World Wide Web, and other various modes of connecting people, the face of communication is changing at a rapid pace. The development of communication technologies has caused an enormous social change.

Mobile phone is currently one of the biggest modes of communication between people as it targets the larger audience but when it comes to elderly, this is where it fails to connect as the needs and requirements of an elderly is different from all other age groups, which needs to be considered separately during the design process.

Designing for elderly requires a "human centred approach" as it is more important to discuss and debate about the technology and design by the people who are going to use them.

The project is an attempt to create an alternative means of communication and information sharing for elderly keeping in mind the physical and technological constraints.

Designing a wearable device for the elderly people, to carry whenever and wherever they feel like, with all basic essential features required for communication and information sharing. For e.g. Sharing of songs and pictures, emergency calling, Tracking system to keep track of family and friends.

To overcome the problem of sight and hearing which comes with the growing age, audio-visual feedback at every step while performing a function and icons for easy mapping and navigation have been implemented in the design.

Also, metaphors for the interface are taken from the already existing mental model of elderly people, so that they don't find it difficult to adapt to the new interface

Chapter 1

1. Introduction
2. Aim of the project
3. Ageing: The Indian Scenario
4. Design Process

1.1 Introduction

Ageing of population is a major aspect in the process of demographic transition. The lives of many elderly are affected more frequently by the social and economic insecurity that accompany demographic and development process (World Bank 1994).

India, as a country, is growing day by day, both in economy and population. We are the second biggest contributors in the rising world population. With the advent of better health care and medical facilities, the number of elderly people living, has considerably increased.

Elderly by definition have lived longer than younger users and therefore represent one of the most heterogeneous groups in society.

Talking about the Indian society, elderly people were considered to be the prime member of the family and were taken care of in the family itself. The culture of joint families and community sharing use to enhance the development of elderly people and learn from the experiences, perceptions and mental model of the world which they have gained and gathered as they grew older. The advent of modernization, industrialization, urbanization and technology breaching in the family barriers, eroded away the traditional values and ethics.

The elderly of our society face special problems and circumstances causing them to have varied needs for companionship and social wellbeing. Some of the various issues facing the elderly include, loss of companions, isolation, declination of physical and mental capabilities.

The needs and problems of elderly vary significantly with their socioeconomic status, family background, age and other similar factors, which are to be kept in mind during the entire design process also as the users grow older their requirements changes and the design solutions thereby proposed should be sensitive to the changing requirements and needs of the elderly.

1.2 Aim of the Project

To provide elderly with an alternative mode of communication and information sharing medium, which could be an alternative to the existing communication technologies, with a simpler yet efficient and easy to use interface.

The project was important considering the information lag which occurs between the elderly when they plan out things.

The general habits and interests of elderly are quite different from that of younger generation. For e.g.

- Listening old songs
- Maintaining notes
- Personal diary
- Reading newspaper daily
- Meeting friends
- Laughter clubs, Senior citizens club

In most of the above cases elderly still follow their own ways of doing things, which if taken care of , can be done in better and efficient ways and also can be made available to a larger group of people.

For instance, listening to old songs, is one of the most commonly found habit in elderly, but they still prefer to listen songs on personal radios, cassette players or gramophone records and also prefer to keep collection of songs of their own choice.

Sharing memories in the form of photo albums is one of the few other common things observed in elderly but its not possible to carry albums or photos all the time.

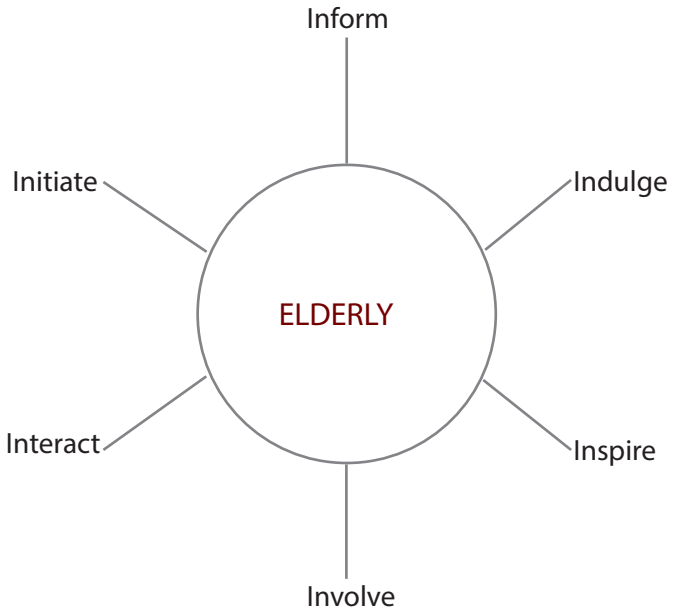
These all problems could have been easy to tackle if, elderly would have accustomed themselves to the use of mobile phones, which is not the case in real, as for them its an intrusion in their private time and space.

Most of the elderly spend their time either in company of their family or in the company of like minded people. Therefore need of communication and sharing arises to pass on the information and personal likes and dislikes with the peer group.

Involving, Indulging and Informing along with sharing between the peer groups becomes the main

focus. The idea is to make elderly feel connected to the assistive technology rather than forcing them to make use it.

For elderly to Share information and keeping each other updated about the activities happening around them and also being a companion to each other by staying connected.



1.3 Ageing: The Indian Scenario

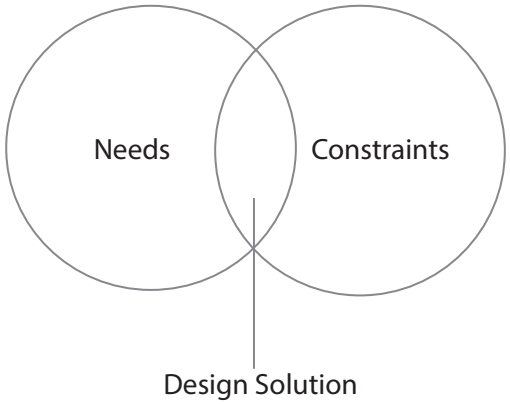
The 2001 census has shown that the elderly population of India accounted for 77 million. While the elderly constituted only 24 million in 1961, it increased to 43 million in 1981 and to 57 million in 1991. The proportion of elderly persons in the population of India rose from 5.63 per cent in 1961 to 6.58 percent in 1991 (Irudaya Rajan, Mishra and Sharma, 1999) and to 7.5 per cent in 2001.

This is true of other older age cohorts too. The elderly population aged 70 and above which was only 8 million in 1961 rose to 21 million in 1991 and to 29 million in 2001. Besides, the proportion of elderly above 70 in the total population increased from 2.0 per cent in 1961 to 2.9 percent in 2001.

The Indian population census reported 99,000 centenarians in 1961 their number rose to 138,000 in 1991. The growth rate among different cohorts of elderly such as 60 plus, 70 plus and 80 plus during the decade 1991-2001 was much higher than the general population growth rate of 2 per cent per annum during the same period.

However, the sex ratio among the elderly in India has favoured males as against the trend prevalent in other parts of the world.

1.4 Design Process



The process started with understanding the issues of psychology, gerontology and companionship in elderly, which gave an idea about the existing need gaps in their lives and the probable scope for implementing the design solution.

The entire design process was a formative one, which involved user's viewpoint at every stage. The overall design process could be divided as:

- Understanding the user group through literature studies.
  - Through research papers and available literature on elderly.
  - Brainstorming around the subject.
  - Mind mapping to generate the directions
- Understanding the problem through user studies.
  - Meeting users from different backgrounds (Married, Single, Divorcee)
  - Elderly living alone
  - Elderly living with family.
  - Daily routines and habits of elderly
- Recognising need gaps based on the research and initial ideation.
- Evaluating the concepts to formalize the final concept.

- User feedback on the final design.
- Detailing the final concept along with a working prototype.

Design progress was equally supported with the user's feedback, keeping in mind all the needs and requirements.

Chapter 2

Research

1. Defining 'Old Age'
2. Ageing Scenario in India, the rising concern
3. Continuum and aspects of Ageing
4. Brainstorming
5. Design and Elderly
6. Technology and Elderly
7. Elderly in Indian Society
8. Primary research
9. Observation and Findings
10. Mapping Connections

"No matter how old you get, if you can keep the desire to be creative, you're keeping the man-child alive." - John Cassavetes

2.1 Defining 'Old Age'

There are number of ways in which old age can be understood and identified.

Ageing can be understood as a biological process, as a stage within the life cycle, or in chronological terms. The former is rather difficult to operationalise for the purposes of research, unless looking at specific groups (e.g., Those experiencing a particular type of cognitive decline). The second approach does find some space in the literature, especially within the field of gerontology, with elders sometimes being denoted as people in the 'third age'.

This refers to Laslett's third life stage of independent post-work (the first two stages being socialization and work/child-rearing).

Most frequently however, researchers take the approach of using a chronological cut-off point to determine who is to be defined as old, which in some cases incorporates 'older' people who are as young as 50.

When defining what old age is, it is worth emphasizing that there are large numbers of people who, while identified as belonging to the 'aged' fraction of our ageing societies, remain autonomous and do not consider them to be old.

Nevertheless, these individuals form groups that have certain characteristics in common. They are largely retired or semiretired, and are therefore likely to have undergone a notable life shift in the move from employment.

As well as broadly sharing various life circumstances, elders as a cohort may have certain attitudes towards

the notion of family, friendship and their associated roles. These also mark them out as a group with unique design requirements, and perhaps do so more strongly than the potential for their experiencing physical or cognitive decline.

2.2 Ageing scenario in India:
The Rising Concern

The size of India's elderly population aged 60 and above is expected to increase from 77 million in 2001 to 179 million in 2031 and further to 301 million in 2051. The proportion is likely to reach 12 per cent in 2031 and 17 per cent in 2051. However, the sex ratio among the elderly favours males, which is contrary to the experience of other developing nations.

The number of elderly persons above 70 years of age (old-old) is likely to increase more sharply than those 60 years and above. The old-old are projected to increase five-fold between 2001-2051 (from 29 million in 2001 to 132 million in 2051). Their proportion is expected to rise from 2.9 to 7.6 per cent.

The oldest old (80+) among the elderly in India is expected to grow faster than any other age group in the population. In absolute terms, it is likely to increase four-fold from 8 million in 2001 to 32 million in 2051.

Considering the above-mentioned figures, its clear that elderly is the growing consumer group and their needs required to be addressed in an efficient manner.

"As users grow older and their requirements change, designers should be sensitive to their changing user needs as well as designing for the users they might eventually become themselves"

2.3 Continuum and Aspects of Ageing

Older users by definition have lived longer than the younger users and therefore represent one of the most heterogeneous groups in the society.

With the growing age, a performance continuum exists in terms of vision, hearing, motor function and cognition. Some of the ways in which ageing affects elderly are .

Vision -Visual impairment in old age varies from partial loss of vision to complete blindness. Some of the visual impairments which occurs at an old age are:

- Decreasing Visual Acuity (ability of eye to discriminate detail) diminishes especially after 50 years of age.
- The average 60 year old requires three times more light than the average 20 year old to see the same level of detail.

- Decreased contrast sensitivity (the ability to distinguish between light and dark) diminishes from the age of 20 years to 80 years with the main decline beginning around 40 to 50 years.
- Worsening light accommodation (the ability to focus on near and far objects) decreases from the age of 8 to 50 years by roughly 50-55%, at which point the decline generally levels off. The decreased elasticity in the lens leads to a reduction in the accommodation and an average near point of 50cm for a 50 year old, compared to 12.5cm for a 30 year old.
- Difficulties with glare (which arises from harsh light leading to discomfort and/or disability). The scattering of light in the eye due to increasing lens opacity increases the effect of glare.

With three times more light required (in relation to visual acuity), the increased likelihood of glare needs accounting for in design solutions for older users.

Hearing - As with vision, changes to or the gradual loss of hearing are most commonly associated with aging. The process is affected by many factors such as work exposure, diet and genetic influences, but by the age of 50 there is often sufficient loss of hearing to cause impairment.

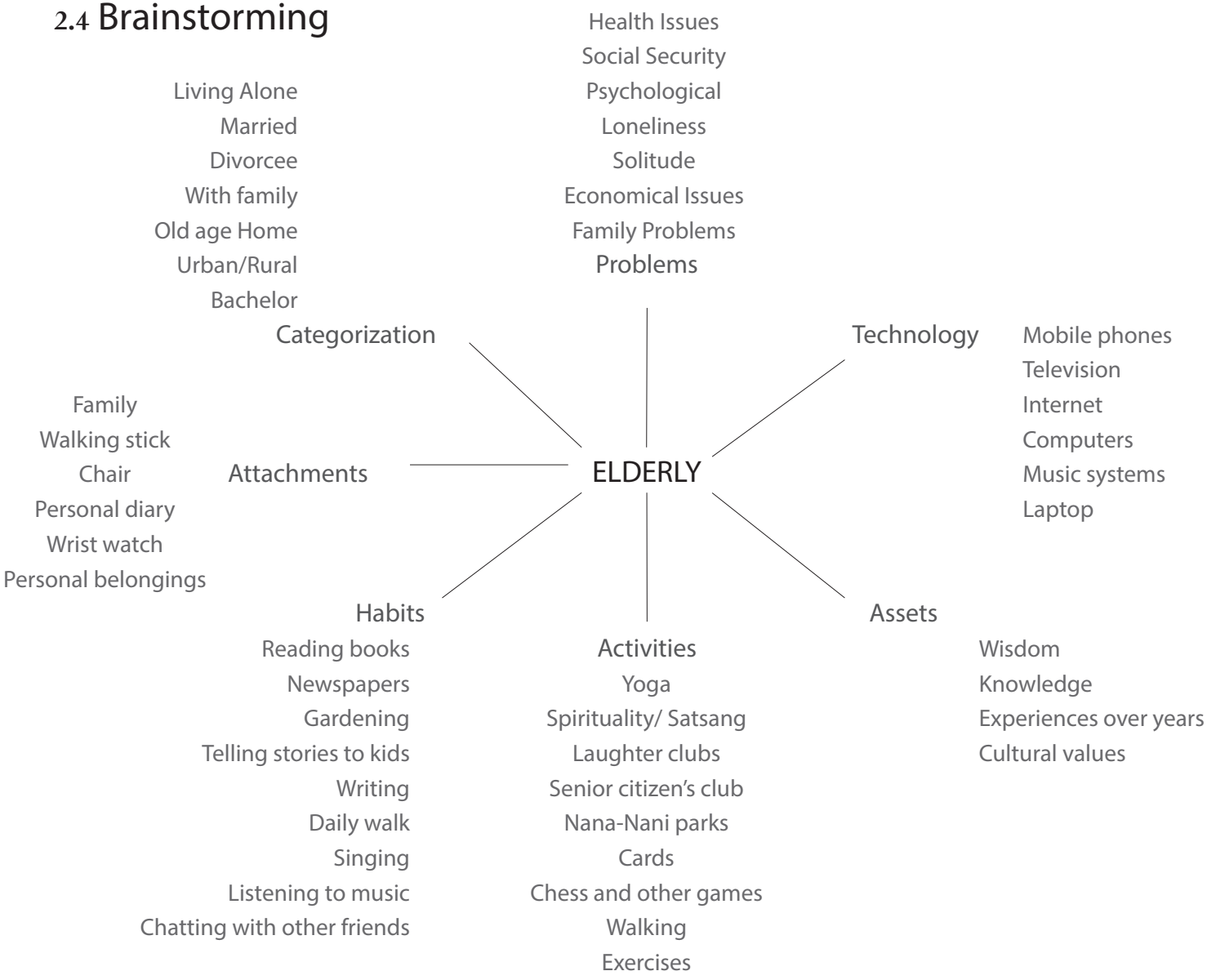
Aging has also been shown to have an effect on the ability to interpret and respond to complex auditory information. The ability to discriminate frequency also deteriorates in a linear fashion between 25 to 55 years of age, after which a greater differential is required especially for the higher frequencies.

Motor Function - Age related changes in hand/motor function appear to occur as a decrease in strength, dexterity and range (Steenbekkers et al., 1998). There is a decrease in grip strength and endurance with age, with force exerted deteriorating from the mid to late twenties (40% decline in strength from 30 to 80 years old) and the average 65-year-old user having only 75% maximal strength.

Cognitive Processes - In general, working memory appears not to decline in relation to storage capacity, but rather processing efficiency declines over time.

Processing speed declines but recalls stays within Miller's 7 plus/minus 2 chunks. Long-term memory declines with age in relation to episodic memory, however, semantic memory is maintained and deficits are rare.

2.4 Brainstorming



2.5 Design and Elderly

Elderly is one of the biggest growing sector of today's population all over the world, thereby becoming the prime focus of design. Several new and innovative designs are coming out addressing the needs and requirements of elderly.

The concept of 'Inclusive Design' is often used to incorporate the needs of older users while designing. Inclusive design is more of a design philosophy than an end product. The underlying principle of this philosophy is that it should enable rather than exclude different users.

Following Inclusive Design in case of elderly means that specific user requirements are identified and met and the design solution is made more participatory and interactive allowing them to be a part of the design process.

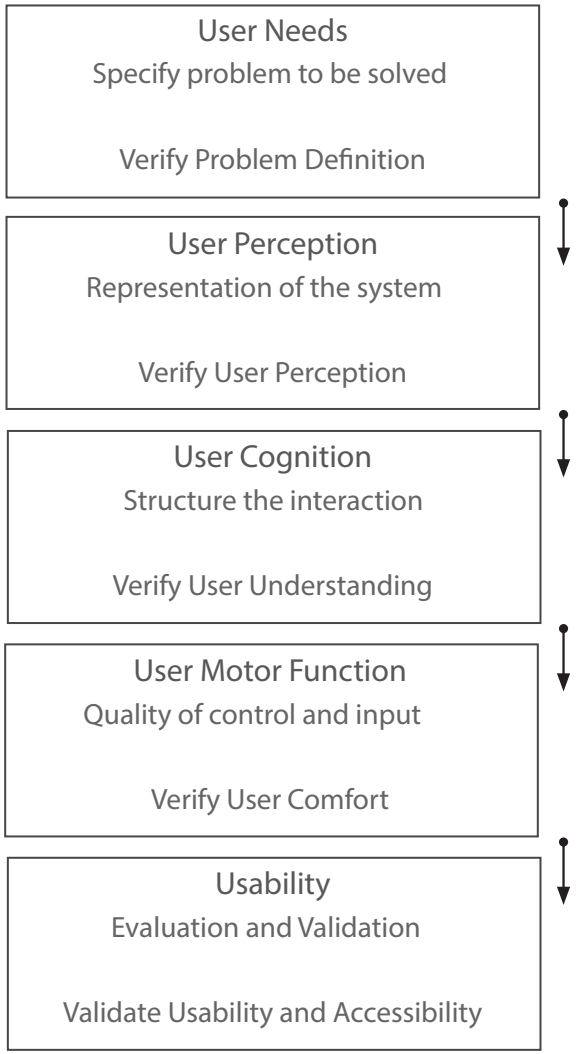


Fig 2 Model of Inclusive Design

2.6 Technology and Elderly

"Elderly reject technology". Nevertheless, there is no evidence that elderly dislike the use of novel technology in a larger measure than other people do (Except, of course, very young people that are usually enthusiastic about technology).

They find complex interfaces, difficult to use thereby they are left with no option other than switching on to some other, easy to use system which could solve their basic needs.

The other general notion which comes into picture is "technological devices are too difficult to be used by disabled and elderly". There are many experiences showing just the opposite: designers who have had contacts with disabled and elderly are surprised of the rapid adaptation and the level of efficiency that these users are able to reach in short time when the device adequately fulfils their needs.

An appropriately designed user interface with easy navigation, is always preferred over other complex devices and systems and also there is more probability of such devices to be used by users of all age group.

2.7 Elderly In Indian Society

The example of a joint family from Indian context is well suited to explain the position of Elderly in Indian society. Indians as a society do respect elders.

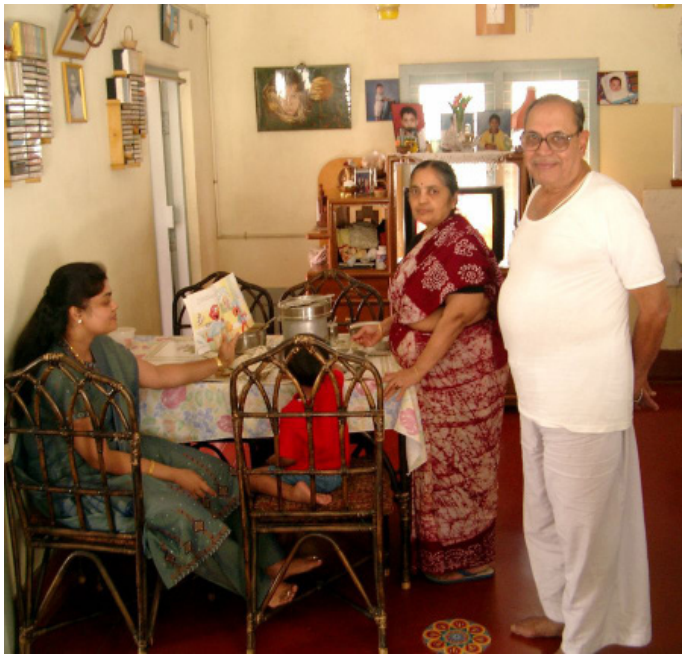
In Indian families, elderly have always been the source of knowledge and wisdom for the younger generations. They often spend most of their time with their grandchildren or with like minded people.
A notable trait still visible in our culture is the respect towards elders.

Indian government has fixed 58 as the retirement age in most of the government jobs and 60 years in educational institution. There is a move to increase the retirement age by another two or five years. People above 60 are considered to be 'Senior Citizens'. Chronological age of 58 or 60 is considered as the beginning of old age. India is undergoing a demographic transition. In industrialized countries, public/private pension streams cover the economic needs of people. In most of the cases economic support still comes from families.

Social security schemes are available in India mainly for those retiring from the organized sector. Ninety percent of the total workforce, however, is employed in the informal sector. This leaves nearly sixty-seventy five percent of all elderly economically dependent on others, usually their children.

Recently the National Sample Survey organization found that nearly half of the aged persons are fully dependent on others. Out of these, three-fourth are supported by their children.

The data presented above shows how we are in some or the other way connected with the lives of our elderly. The older generation has always been a part of family in Indian culture, but with rapid urbanization and modernization, joint family culture is slowly dissolving and families are becoming nuclear and smaller and often there is no place for elderly in such family system.



2.8 Primary research

Having understood the user group through brief research, need for primary research in the form of user studies arose.

The user study was classified in 2 categories:

1. Based on User group
2. Based on space surrounding them.

For the first category research was mainly done with 4 kinds of user groups in mind i.e.
Elderly living alone
Elderly living with family
Marital status
Users with different backgrounds (Single, Divorcee)

The main focus was to find out their interests, daily routine, common habits, problems etc. The initial discussion was very general in nature focussing more on their living style and patterns. Elderly above 60 years of age were considered as the potential user group considering the needs and requirements which changes quite significantly at this age.

The second approach was to meet people at different places and timings. For e.g. Elderly go to parks, spiritual gatherings, laughter clubs, senior citizen's club and other group activities which, often are a part of housing or society they live in.

Several such spaces were taken into consideration. Few of them were: Senior citizen's club, Kandivali, Nana-Nani park at Girgaon Chowpatty, Aaji-Ajoba Udyaan, Shastri park, Sunhere Pal, Chembur, Powai Laughter club, Hiranandani and a park in Thane.

Studying people in these surroundings helped in understanding the activities elderly people involve themselves in and how they interact with the people around them. A general study of the daily routine was done to look out for the areas of intervention.

Aaji-Ajoba Udyaan, Shastri park

2.8.1 Senior Citizen's Club, Kandivili

A Small group of elderly which daily meets at 7 pm in the small parking area, designated for this daily meeting. Meeting lasts for an hour and people keep joining in while the session progresses. The interesting fact was that people avoid talking about their family problems during that one hour of their meeting as they believe in spending that time, talking and sharing good things.

The group often goes for picnics and small fun activities but prefer that in the company of same age group and like minded people but they also look forward for new people to join.

2.8.2 Powai Laughter Club, Hiranandani

Powai Laughter Club, Hiranandani, is one of the places where people of age group 60-80 years, come together to spend few hours exercising and sharing few good moments full with laughter and music.

The session starts at 7 am sharp and people keep joining in whatever time they reach. Formation are in groups and people prefer one to one interaction. Since, the meeting point always remains same, there is no confusion about the location and other details for the upcoming events.

The laughter and exercise session is generally followed by small interactive sessions, where people share jokes, sing and exchange views on common issues.

2.8.3 Sunhere Pal, Chembur

For most people, Saturday evenings are for going out with family or friends. But for the members of Sunehre Pal, it's a time for nostalgia. The group meets on the first Saturday of every month to listen to old Hindi film songs from 1947 to the '60s.

Sunhere pal was the brainchild of Balan Iyer, an academic consultant, the idea behind starting the group was to get like-minded people together for a kind of music that is becoming rare.

Every session starts with an introduction by Iyer on the day's theme, like great duets of yesteryear. At the meetings, after each song, the members share their memories or bits of information about the numbers. For elderly these meetings are a chance to bond with others and relive their youth through the music

2.8.4 Aaji-Ajoba Udyaan, Shastri Park

A place only for elderly to enjoy the world of their own, such is the quality of Aaji-Ajoba Udyaan, Dadar Shastri Park. This is one of the many parks run by Nana-Nani foundation whose primary aim is to help improve the "quality of life" of the elderly in India irrespective of caste, creed, religion and social or financial standing.

Only elderly are allowed entrance in these parks, which gives them a harmonious environment to be in. Since, specially designed for senior citizens above 60 years of age, with all basic activities and facilities like Yoga, Medical checkups, Picnics, Laughter sessions, Cultural activities.

People feel comfortable and find it their own space.

2.9 Observations and Findings

During the course of research several important observations and findings were identified:

- In most of the group meetings (morning walks, laughter clubs, yoga sessions) people keep on waiting for everyone to join , as they have no prior information of the people who would be coming late or won't be coming.
- People don't inform if they are not going on a particular day.
- People miss on the information which takes place while they were absent or late, and have no means of knowing what exactly happened during that time.
- People discuss and share jokes or sing old songs after their daily laughter sessions.
- If they find some new activity going on in nearby localities, they share it with their group and get that started.
- Each group member's details, like contact number, blood group, family members, address and other such details are maintained to be used in case of an emergency.
- All have a learning attitude and have picked up things, like sending email or cooking etc according to the need, after retirement.

- Most of the elderly had memory problem and they generally keep diary to take a note of important things to remember.
- Mobile is generally avoided during the time of morning walks or laughter sessions as they feel it intruding their private space and time.
- Fear of loosing cellphone is one of the major reasons, because of which elderly people avoid using cellphones.

2.10 Mapping Connections

Common Routine

A)- Outdoor Activities (in group)

- Spiritual gatherings
- Exercise
- Daily walk
- Singing
- Laughter Clubs

B)- Indoor Activities (individually)

- Writing Diaries
- Watching TV
- Listening to radio
- Reading
- Singing

Common Problems

A)- People living Alone

- Loneliness
- Sense of not being wanted
- Social Security

B)- People living with family

- Family Issues
- Dependency

C)- General Problems

- Health Problems
- Physical Disabilities
- Age related problems

Common Observations

- Fond of telling stories
- All have a learning attitude
- Enjoys company of like minded people.
- Believes in giving space to family.
- Share Jokes and other fun moments with each other
- Often look for a company to tell their stories to.
- Prefer to avoid mobile phones with the fear of loosing it.
- Willing to learn and adapt new technologies.

Chapter 3

1. Design Brief
2. Design Scope
3. Design Objectives

3.1 Design Brief

To design an assistive mode of technology for elderly to connect with their peer group and also to bridge their information and communication needs.

The need identified is in the daily communication and sharing of information and other personal interests where there is a gap to be filled with an appropriate design solution keeping in mind the specific needs and requirements of elderly.

Essential Parameters:

1. The design must involve and inspire the user to initiate and enhance sharing and exchange of information within the group.
2. The device must be easy to use by the elderly people.

Desirable Parameters:

1. It should also make them feel good about their age and as an important part of the society.
2. Simple yet easy to use technologies keeping in mind the drawbacks elderly face by the existing ones.
3. The device must be compatible with other communication devices.

Incentives:

1. The device could be connected to all other forms of media besides computer, to download or upload information

3.2 Design Scope

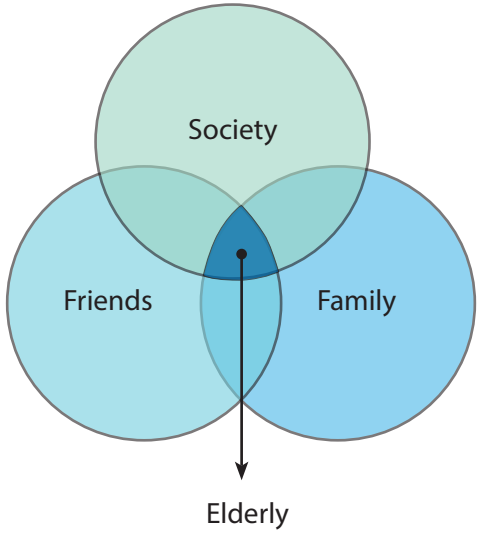
Project scope is to make a handheld device, easy for elderly to carry with them, having all essential features which they would require to stay connected with friends and family.

The user group identified were:

- People above 60 years of age.
- Living in urban cities
- No physical disabilities (problems due to growing age kept in mind)
- English and Hindi literate.
- More than one time user of mobile phones.

Considering the circles of family, friends and society with which elderly are surrounded with, project looks into the communication need of them within this zone.

The basic needs of keeping each other updated and exchanging information about anything of interest, companionship with fellow elderly, contribute to the society, discussions or opinions on several issues and communication with fellow elderly, falls into the scope of designing.



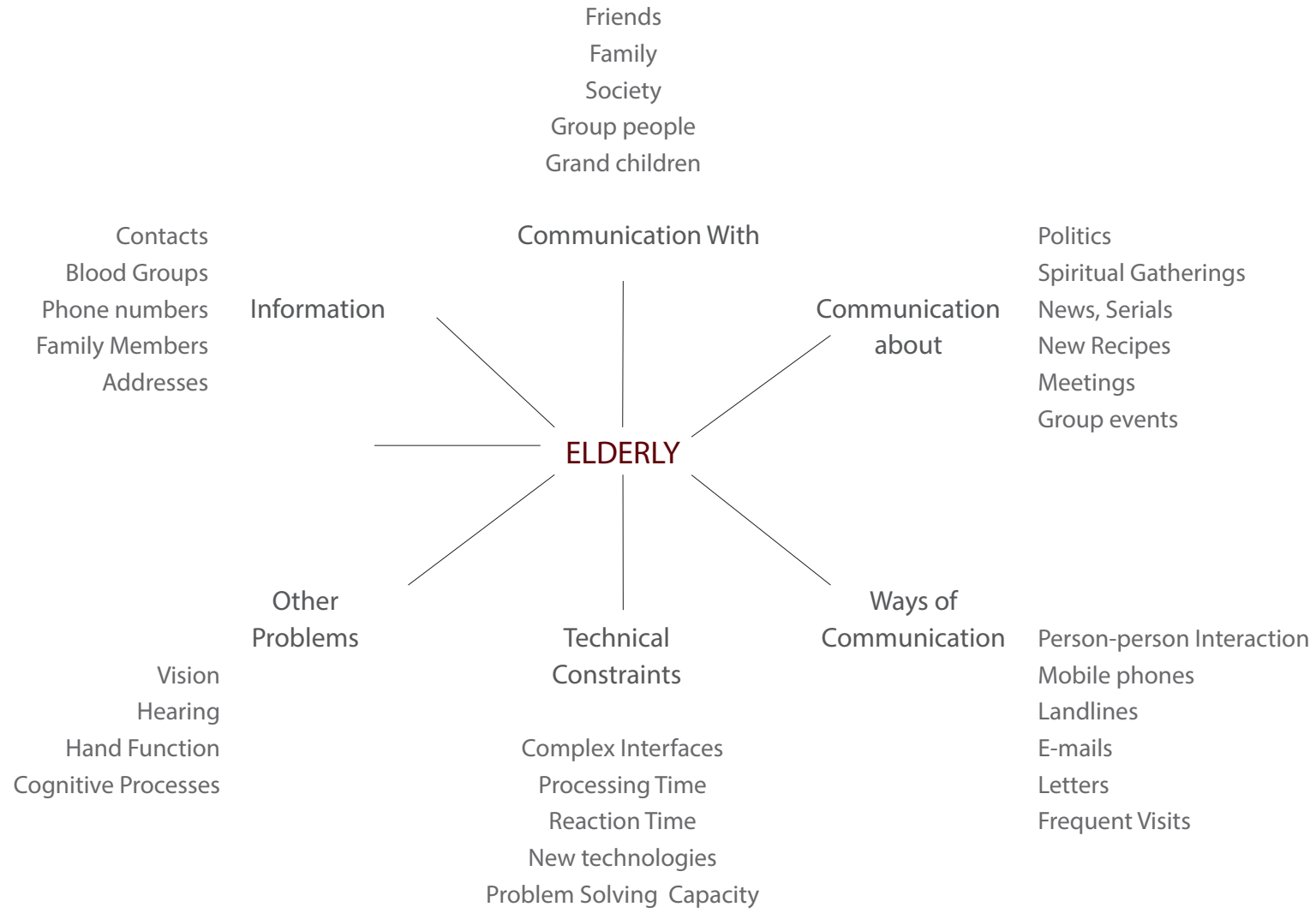
3.3 Design Objectives

- To make the device more secure as most of the elderly have fear of loosing their personal belongings and often they misplace things due to the memory loss which comes with the growing age.
- Enhance the process of group sharing.
- An assistive technology with which elderly can feel connected to.
- Should be compatible with other modes of communication.
- To remove the fear of technological constraints, by making a simple and easy to use interface.

Chapter 4

1. Mind Mapping around Insights
2. Initial Ideas
3. Design Ideas (1,2 & 3)
4. Validating Concepts

4.1 Mind Mapping around Insights



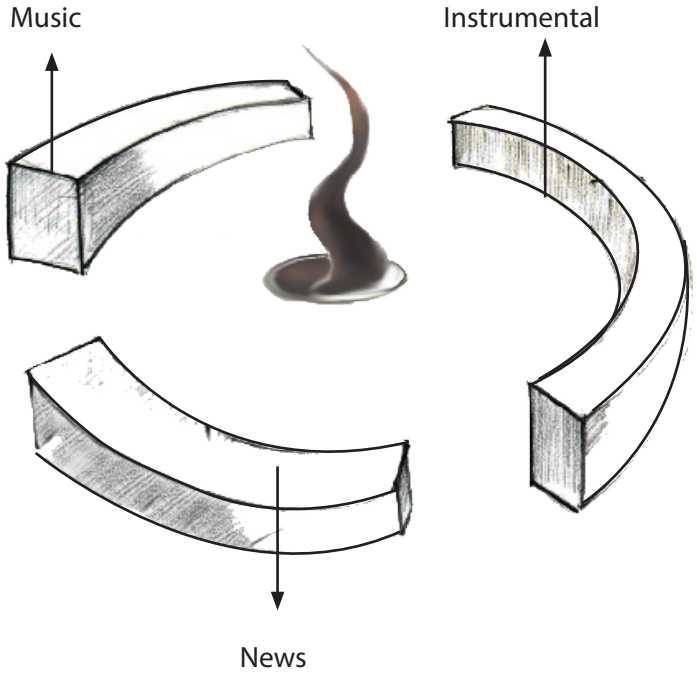
4.2 Initial Ideas

Several initial ideas were worked upon, keeping in mind the general habits of elderly people. Several key points and key features were generated out of each idea which were evaluated and mapped on with the insights to get the initial design concepts which would help in information sharing.

Initial ideas generated were:

- A public space in which people can sit and enjoy the spaces of their own interest
- A public installation for enhancing group reading, through which elderly can sit and discuss news and politics with their friends.
- An easy to carry personalized device for sharing songs, music and jokes, which also enhances connecting people together.
- A two-way system to keep people of same group, informed and updated.
- A personalized inter connected device, allowing elderly to stay connected and also share information of their interest with friends, family and other people.

4.3.1 Design Idea-1: Personalized Spaces



The idea behind this concept was to give a personalized environment to the elderly people , where people with same interest could come together and exchange views and opinions based on the area of their interest.

The idea of making a space was to target the environment where elderly often visit or prefer to spend their free time. Parks are one of the few places where elderly can be easily found in groups talking and exchanging notes with like minded people.

Key points evolving out of this idea were:

- Information Exchange
- Personalized Space
- Relax and enjoy the space
- People could initiate conversations.

How it works?

A separate zone was identified in a public space, which elderly people visits daily. The zone was then subdivided in to different spaces and each space was designated one activity, which an older person would be interested in being part of.

The space activities were formulated, keeping in mind the interests of elderly. For e.g. If a person is interested in listening to old songs, he could be a part of the space where he could listen to the old songs, similarly a person interested in news or politics could find the space where he could listen to daily newscast.

Idea was to give elderly people a space of their own interest, which could also enhance the process of interaction between like minded people.

4.3.2 Design Idea-2: Interactive Newsreading Booth

Newspaper reading was one of the most common habit found during the process of initial research. Elderly starts their day with reading newspapers or whenever they have time of their own.

Elderly people often reads newspaper in the parks, based on this observation the idea generated was to make a common newspaper booth, where people could listen as well as read the daily news of their choice, in groups. While reading they could even exchange their views on a particular topic.

Key points evolving out of this idea were:

- Group Activity
- Involving process
- Updates of the surroundings
- People could initiate conversations.
- Informed of all the important events happening around the globe

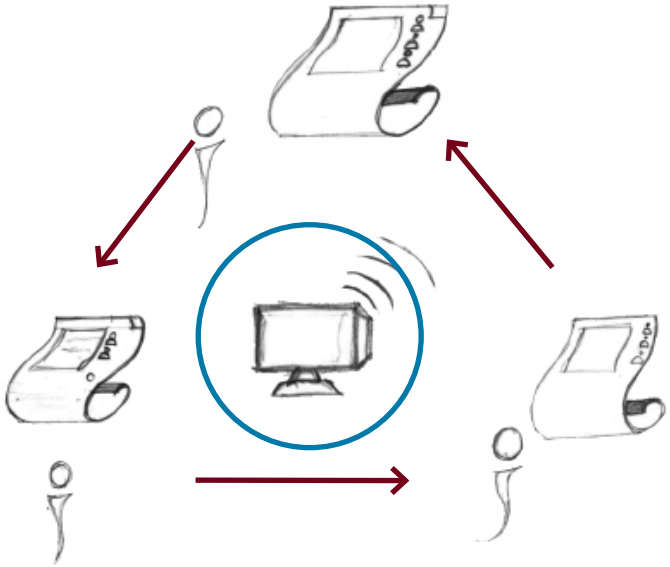
How it works?

Considering the newspaper reading habit in elderly, the idea generated was to make an interactive newspaper reading booth.

Hearing and vision being the common problem which occurs with growing age, audio-visual feedback while reading was considered, so that the person could read as well as listen to the news.

The booth was divided in several segments for many people to listen together at the same time. Each booth had different news segment running, making it optional for a person to select a segment of his own choice.

4.3.3 Design Idea-3



Elderly have their own choice of songs which interests them. Collection of songs of bygone era is rarely found at music stores, but senior people still have those songs with them, in some or the other form.

The idea behind this concept was to make such rare collection of songs available for sharing anytime and anywhere. The person could listen to his personal collection and can also share his songs with someone he wants to, which could be possible anywhere whether being at home or outside.

Key points evolving out of this idea were:

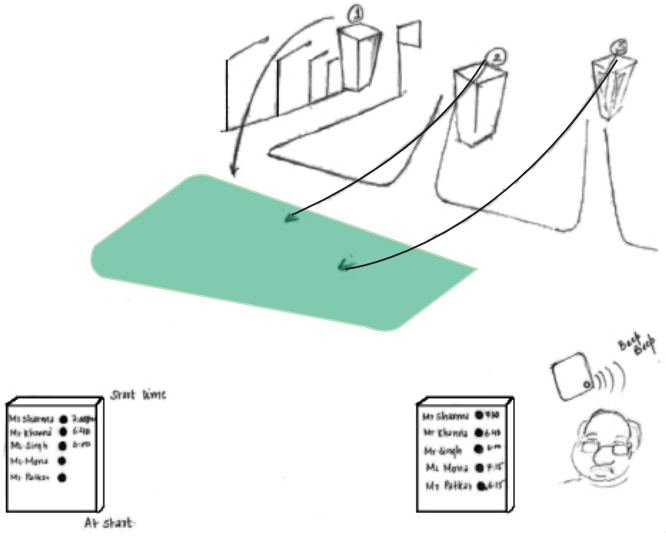
- Sharing interests
- Personalized device
- Sharing possible, even when on move.
- Interaction
- Enhancing person to person relationships

How it works?

An interconnected device which connects all the users, having the same device. Internal memory could be used to store songs and movies of their choice.

Since all the devices are interconnected through GPS, so the sharing of the songs could be done through same technology or when in proximity the device could be connected to each other and the selected songs could be saved to the device by accessing the playlist of the other.

4.3.4 Design Idea-4: Daily Attendance System



Informing other group members about the being late or unable to come, is a commonly observed problem which all elderly faces. People often end up waiting for other group members to join resulting in whole activity getting delayed.

A two way system in which a person could record his starting and reaching time to the point of activity which gets updated everyday. The communication gap is bridged through this mode of information sending

Key points evolving out of this idea were:

- Informing
- Communicating
- Initiating
- Assisting

How it works?

Its a two-way system, comprising of a personal device and a common server device installed at the meeting point location, which records all the data being sent and received.

A person before leaving from his place to the meeting point, just presses his device and this input time is recorded by the central server. Once he reaches the meeting point, the device gets an automatic notification from the server, reminding the person to press his reaching time.

Recording the starting and reaching time, provides the right information on time and simultaneously, also keeps a record of the daily gatherings.

4.4 Validating Concepts

IDEAS	Media Sharing	Sharing Interests	Personalized	Compatible With other devices	Companionship	Solving physi-cal problems of old age
Design Idea-1						
Design Idea-2						
Design Idea-3						
Design Idea-4						

From the above analysis, it is clear that Design Idea-3 has most of the key features required for sharing and communicating information within the elderly people, but still it lacks on many other areas.

With the insights gathered from the user research, were analysed to explore other possibilities, before approaching towards the final design idea.

Chapter 5

1. Idea Generation
2. Keywords
3. Concepts (1,2 & 3)
4. Evaluating the concepts

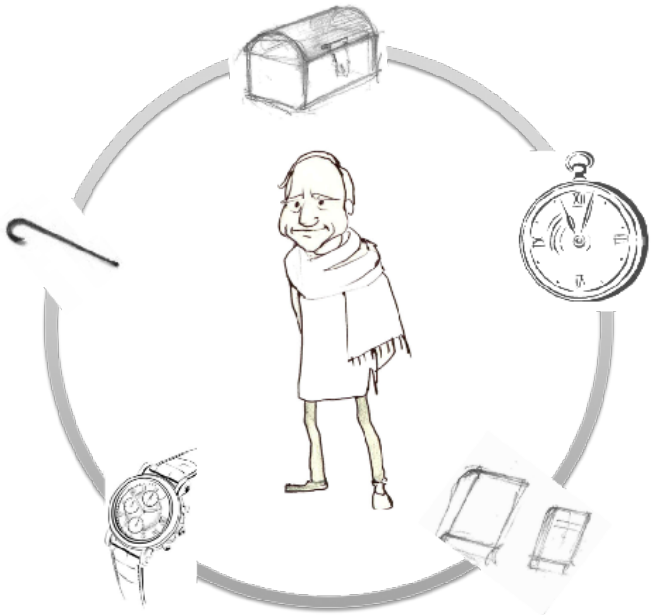
5.1 Idea Generation

Along with the insights and basic ideas in place, the process of ideation was carried on to generate ideas, which would be more closer to the process of information and data sharing.

Looking at the basic needs of elderly, it was realised that elderly people should feel connected to the device or system they would be using. Elderly are personally attached to many things around them, and using them as metaphors were few of the initial design decisions.

Metaphor of a pocket watch was selected, as its easy to carry, could be worn around, easy to operate while wearing, no fear of loosing, protective lid prevents it from breaking in case of a fall and also this is one thing which elderly could feel connected to.

Information sharing not only restricts to sharing of songs or media files, there are several other things which elderly share with their family and friends.



5.2 Key Words

The information from the user studies and the insights gathered, were chunked into keywords to evaluate each concept developed. each concept was evaluated by mapping the keywords with the concept.

Keywords framed were:

- Explore
- Motivate
- Connect
- Remember
- Fun
- Sharing
- Self-dependency
- Companionship
- Exchange
- Updates and Information

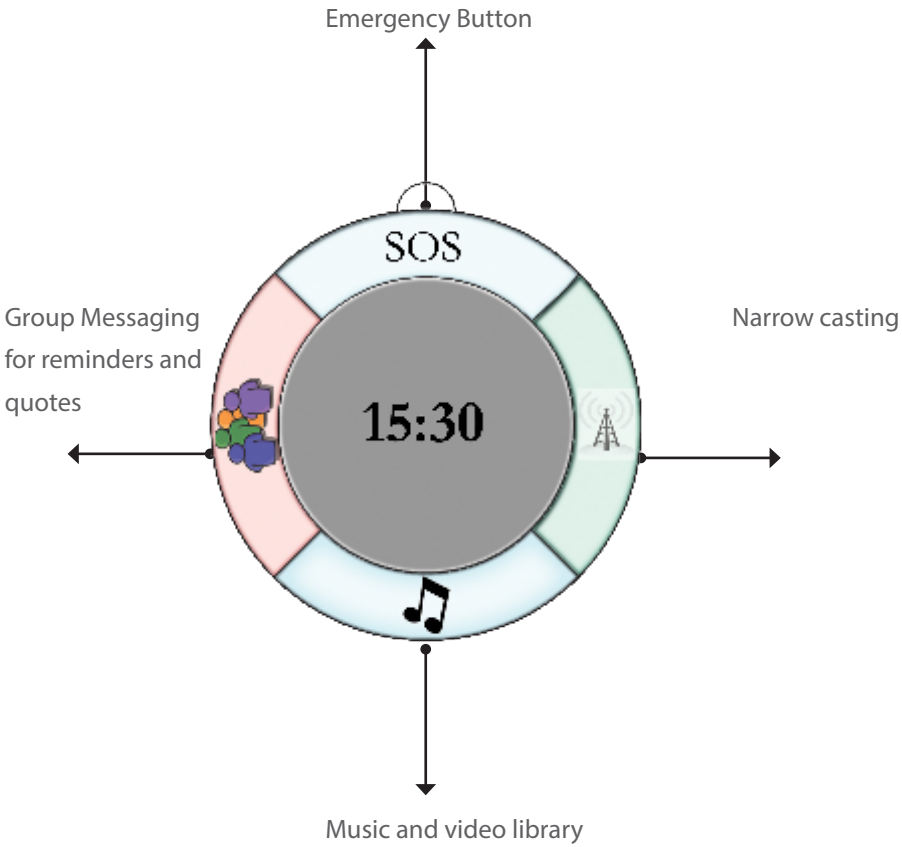
5.2.1 Concept-1

Taking ahead the idea of sharing information, few other ideas were generated, keeping a wearable or handheld device as one of the design decisions, as it would be easy to carry.

Based on the insights gathered, a handheld device with basic functions of sharing songs, videos, jokes and daily conversations along with other essential features of setting group reminders and emergency calling was implemented to make it more useful for the elderly.

Some of the key features of this design were:

- Circular form makes it easy to hold and grip.
- A personalized device for sharing and communication.
- Minimum functions (sharing media, emergency calling, group reminders) as compared to that of cellphones or other communication and sharing devices,makes it easy to operate
- Simple interface and easy to learn.
- Audio-Visual feedback.
- Touch screen for the ease of use.



5.2.1 Evaluating the concept

In order to evaluate, the earlier generated keywords were mapped on to the concept to get an idea of the number of domains, the concept takes care of.

- Explore
- Motivate
- Connect
- Remember
- Fun
- Sharing
- Self-dependency
- Companionship
- Exchange
- Updates and Information

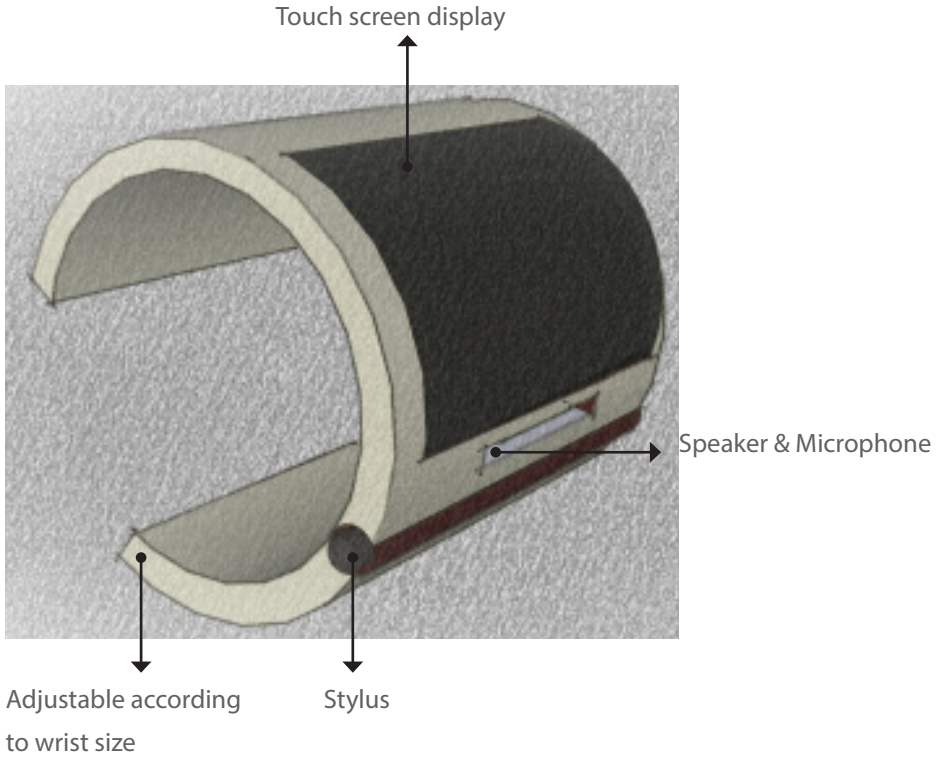
5.2.2 Concept-2

Moving ahead from the idea of personalized sharing system, a handheld device was proposed for elderly which not only allows them to share music,but also to send voice messages, capture videos with voice tagging system. The idea was to make the device available to them, when and wherever required.

Giving more options in a personalized device, not only enhance the possibilities of bridging communication gaps but also involves the elderly in doing creative activities within their own circle of friends.

Key points evolving out of this idea were:

- Sharing interests
- Personalized device
- Involving



5.2.2 Evaluating the concept

Although the idea seemed to be functional as far as sharing was concerned, but it lacked on several other key areas, which was realised after mapping the idea with the keywords.

- Explore
- Motivate
- Connect
- Remember
- Fun
- Sharing
- Self-dependency
- Companionship
- Exchange
- Updates and Information

5.2.3 Concept-3

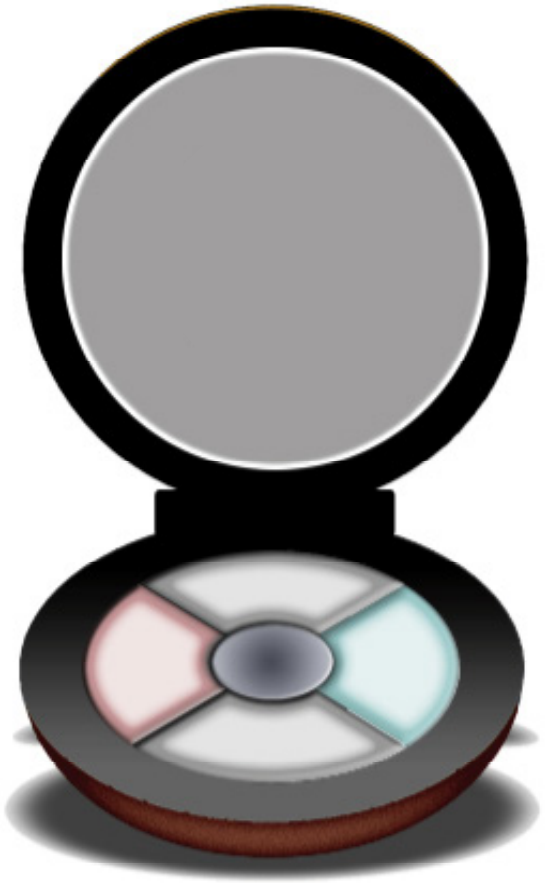
The concept focuses more on sharing of media files and making the entire process simple and easy to learn, even for the first time users.

The idea was a refined version of few ideas, generated in the earlier stage. Easy sharing of songs and pictures and even personalizing each song and picture by adding details makes it a more rich with information.

The upper lid acts as display screen, while the lower surface accommodates buttons and each button is mapped with an icon which appears on the screen making the navigation much more simpler.

Elderly people often feel the need of sharing personal memories in form of songs, jokes, pictures with their friends. The device allows them to share it with friends, family and all other people.

Provision of GPRS tracking, enables them to track their friends and also can be tracked by their family in case of emergency.



5.2.3 Evaluating the concept

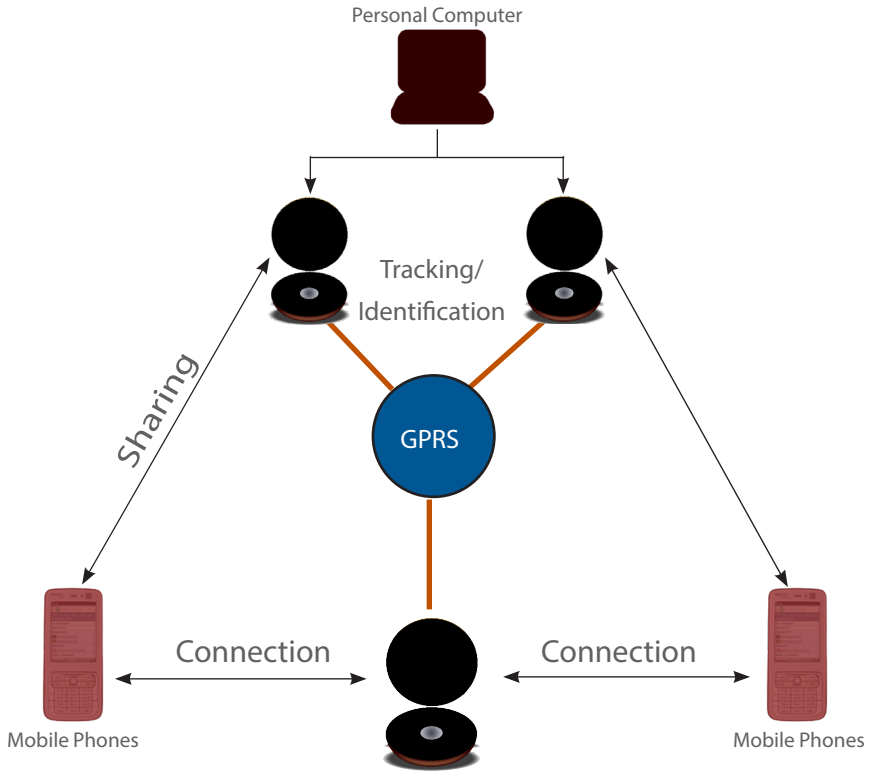
The idea takes care of most of the requirements like sharing songs, pictures, group messaging, group reminders, tracking friends and family along with easy navigation and audio-visual feedback. Also the device takes care of the basic ergonomical factors, for e.g. Form, placement of buttons, screens, navigation modes etc.

- Explore
- Motivate
- Connect
- Remember
- Fun
- Sharing
- Self-dependency
- Companionship
- Exchange
- Updates and Information

Chapter 6

1. The System
2. Final Design Development
3. Development Process
4. Product Detailing
5. Design Decisions
6. Icon Study and Design
7. Design scenarios
8. Final Prototype
9. Usability Evaluation
10. Design Iterations

6.1 The System



The final concept came out of the refinement of all the earlier generated ideas, taking care of all the needs and problems that comes with the growing age. The solution was in the form of a handheld device, evolved from the metaphor of a pocket watch and could also be worn around the neck and kept in the upper pocket, preventing it from getting lost.

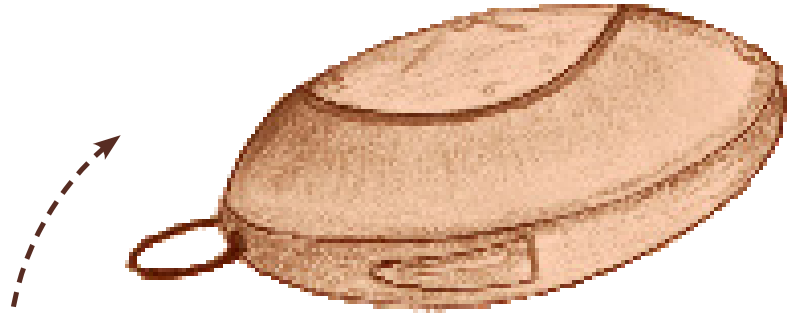
With age, comes the problem of vision, hearing and several other problems. The device takes care of the major two i.e. Vision and hearing, through audio-visual feedback. Also the input mode is in dual medium-

- Through buttons
- Touch Screen

Handheld device is the main component of the system, while the other sub-components are:

- Personal computer to transfer songs
- Voice recognition system.
- GPRS and Bluetooth enabled phones.

6.2 Final Design Development

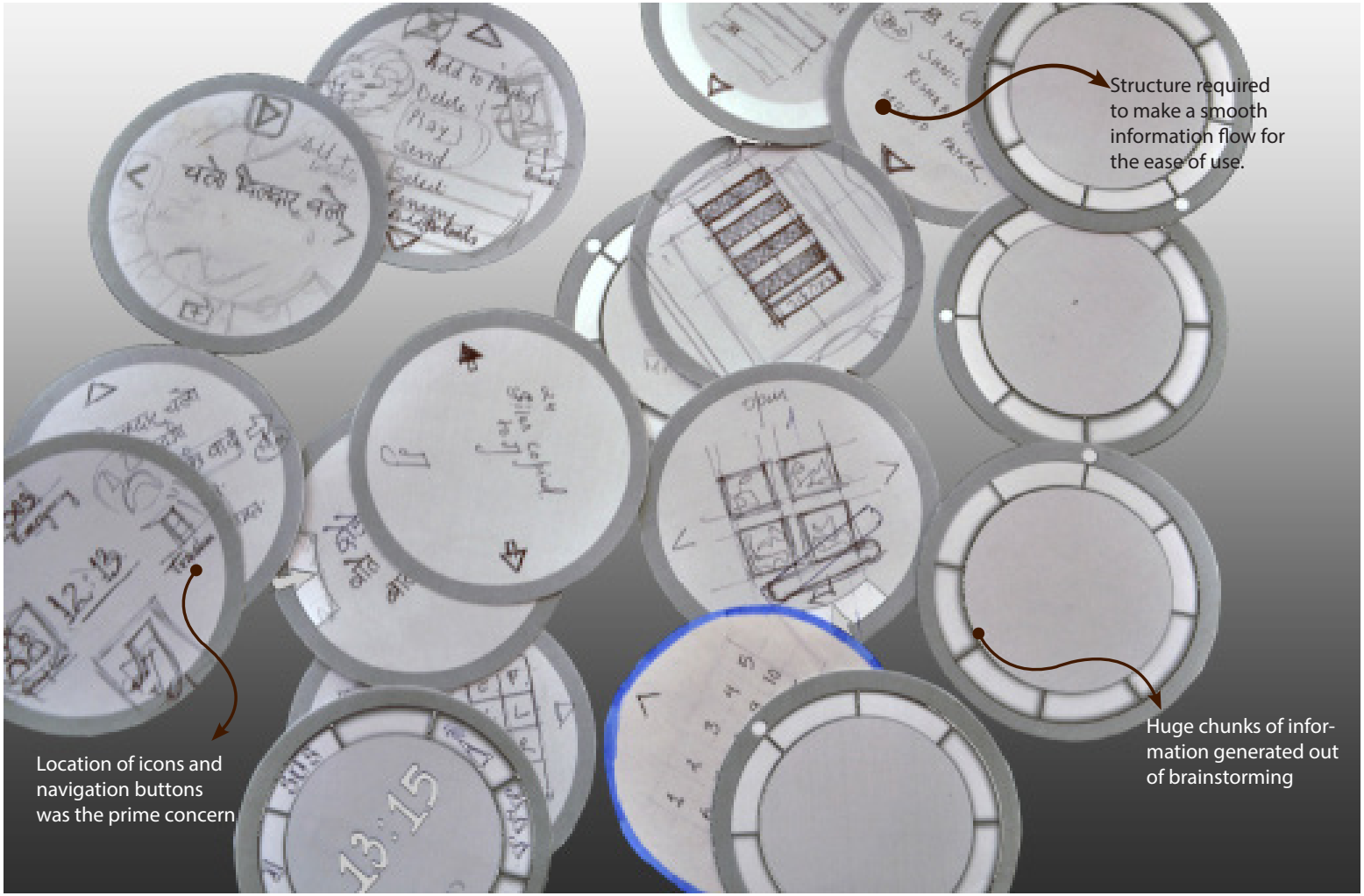


Circular form was found to be easy to hold and operate while performing any function.

Keeping the identity of Pocket watch as the starting point, several forms were experimented to best suit the user.

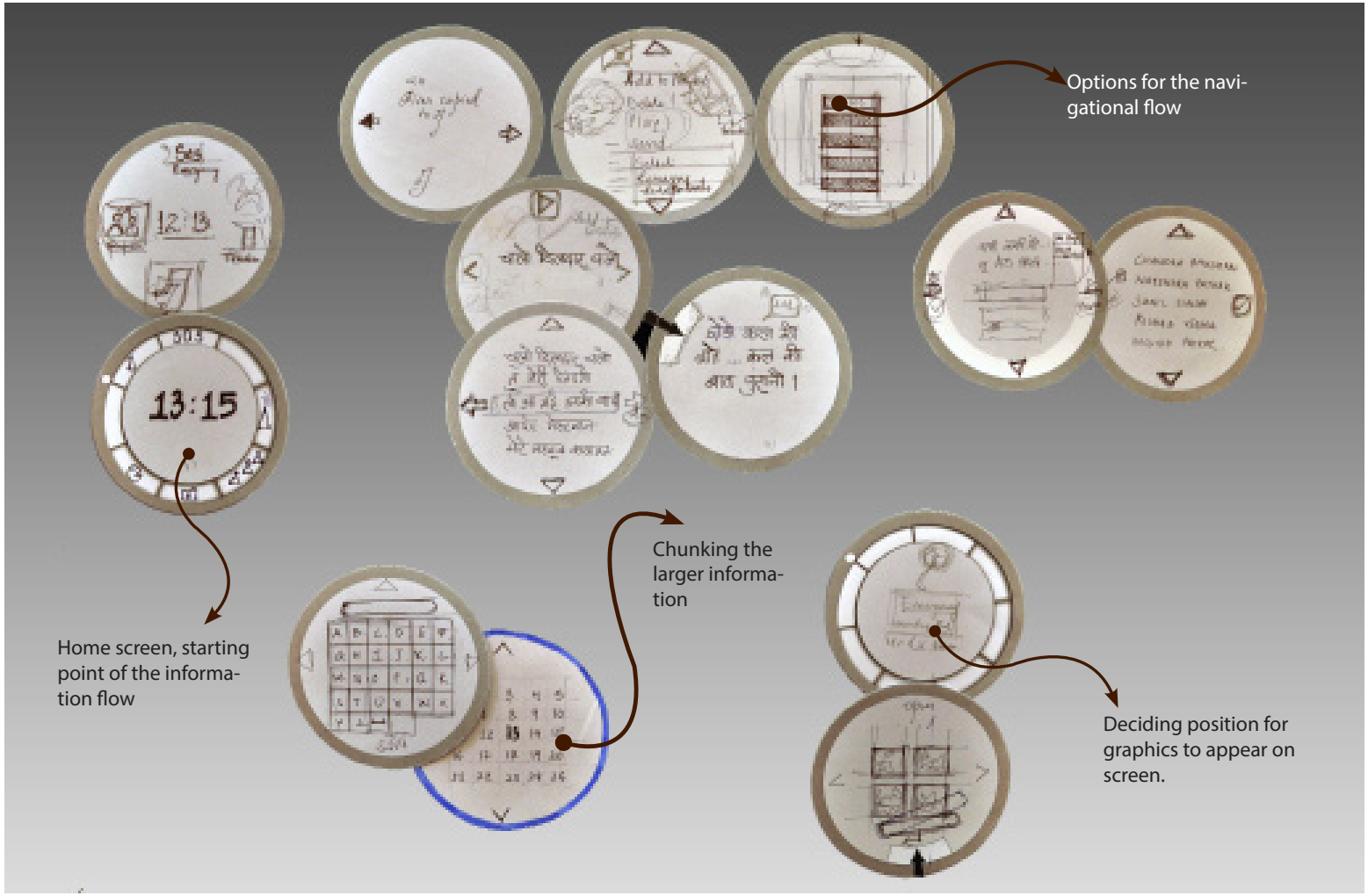
6.3 Development Process

Step-1: The process started with gathering the information required to be organised in order to share the information. All essential functions were grouped to come out with an information flow.



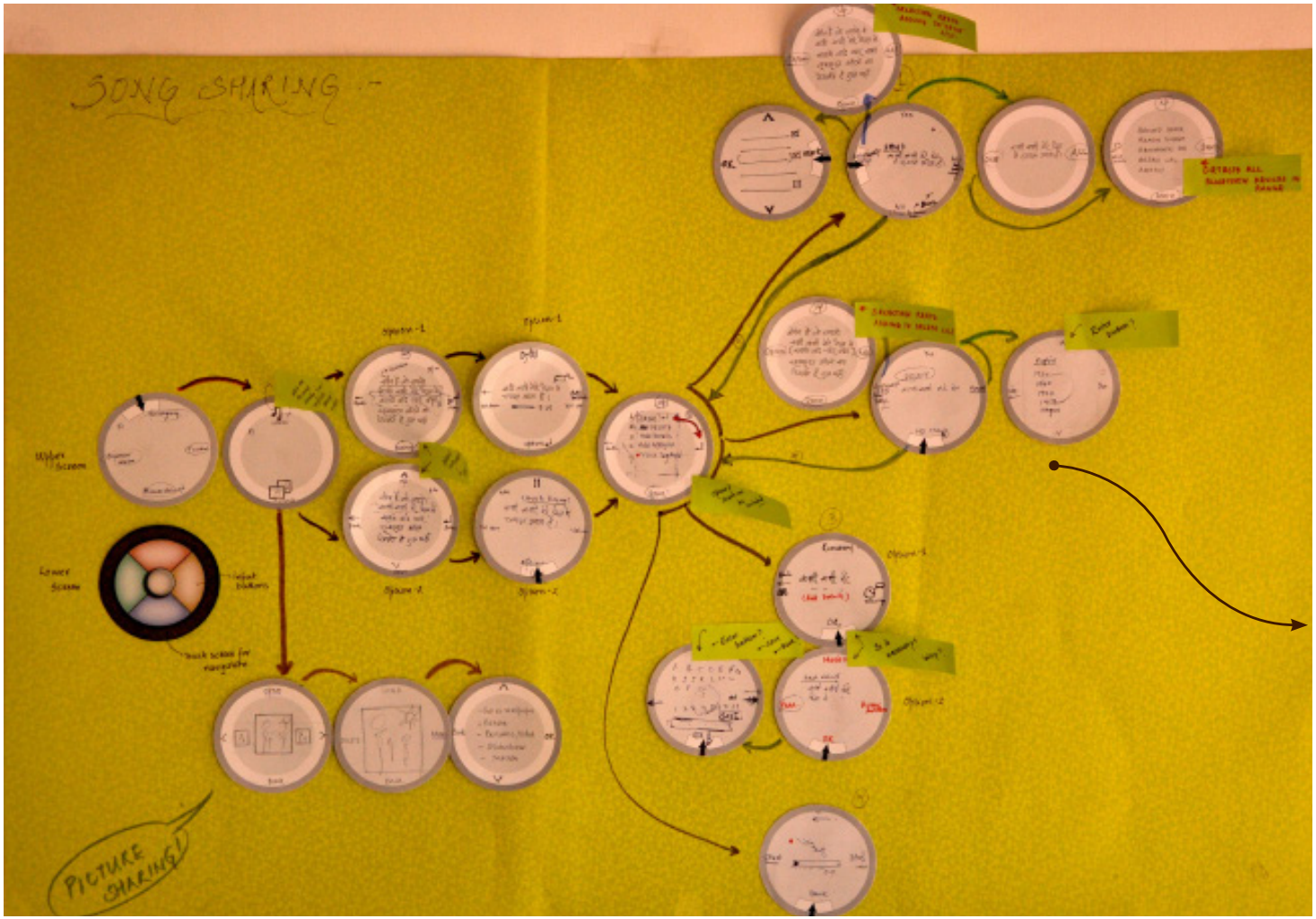
6.3 Development Process

Step-2: Information flow was generated out of the brainstormed functions, But the information was more or less linear. In order to look into the overlapping information more detailed Information flow was made



6.3 Development Process

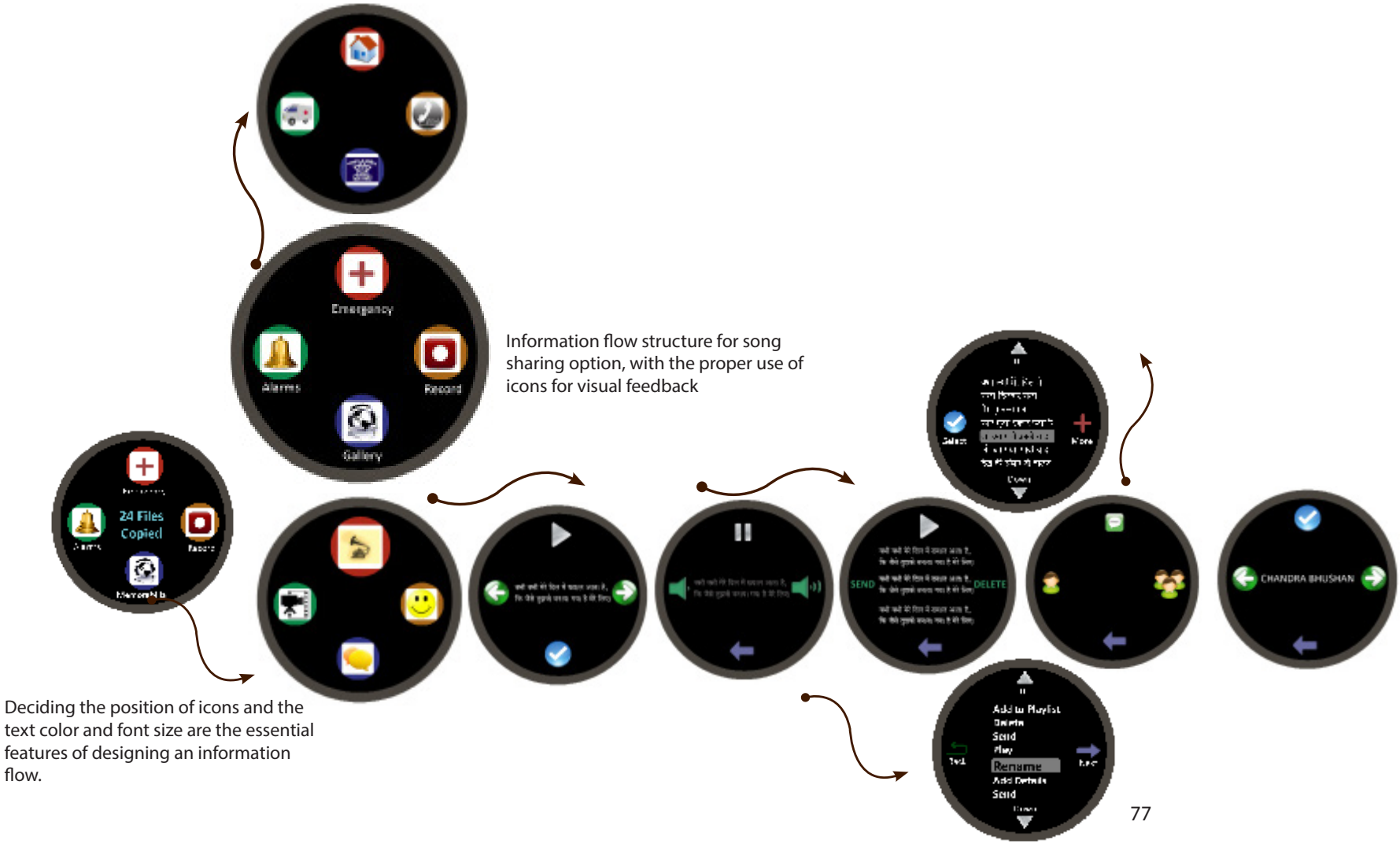
Step-3: Information structure which helped in finalising the screen information to appear on each screen of the device.



Worked out , information flow to get an idea of nukber of screens and also the location of icons and navigation buttons

6.3 Development Process

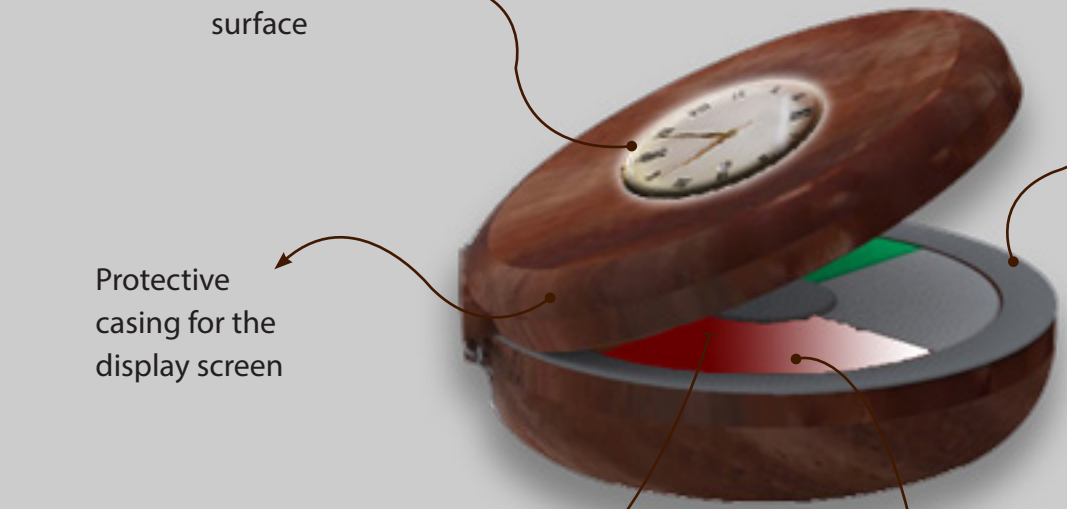
Step-4: Information was supported with visuals to make the interface rich with information



Information flow structure for song sharing option, with the proper use of icons for visual feedback

Deciding the position of icons and the text color and font size are the essential features of designing an information flow.

6.4 Product Detailing



Front View

Side View

Sampark

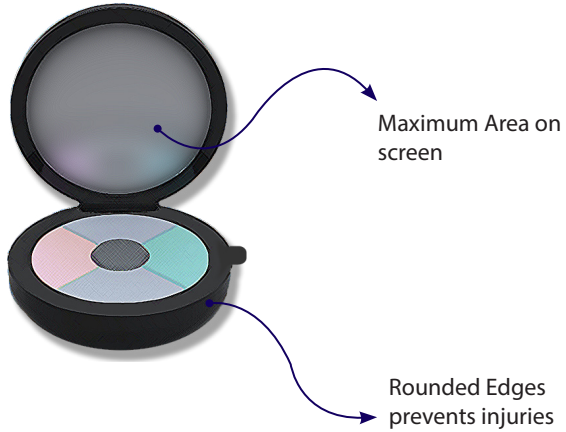
6.5 Design Decisions

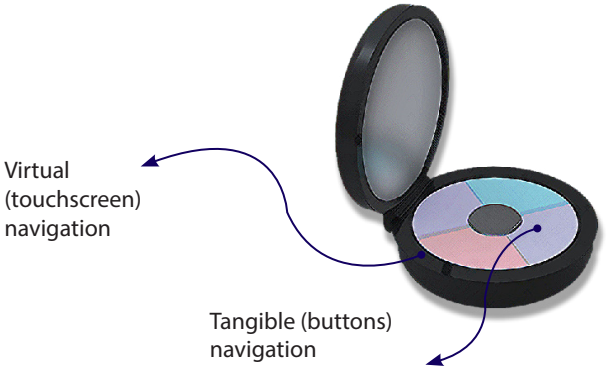
While moving ahead with the final design, several design decisions were made, based on the initial research and user feedbacks. Ranging from the form to the mode of input were all decided, to make it more effective and functional.

- ### Circular Form

Circular form was chosen because of various reasons which came out of literature studies and user's inputs. Since its a handheld device, giving it a circular form allows

1. Easy grip while holding it in hand.
2. No sharp edges.
3. Maximum area can be utilised on the surfaces.





- ### Input/Navigation System

Considering the problems arising with growing age (shaking hands, finger strength), it was decided upon to give both tangible and virtual input system.

1. Making larger buttons and mapping them with the icon on the screen helps in easy navigation and user also gets a feedback.
2. Touch screen makes the navigation easy by allowing the user to browse many files in one go.

6.5 Design Decisions

- Audio-Visual feedback

Providing inputs at every step, while performing a function, reduces chances of errors and since elderly people face the problem of less vision and hearing power, so it becomes essential to give them feedbacks, in audio and visual form so that they can see as well as listen to the unction they are operating.

- Interface

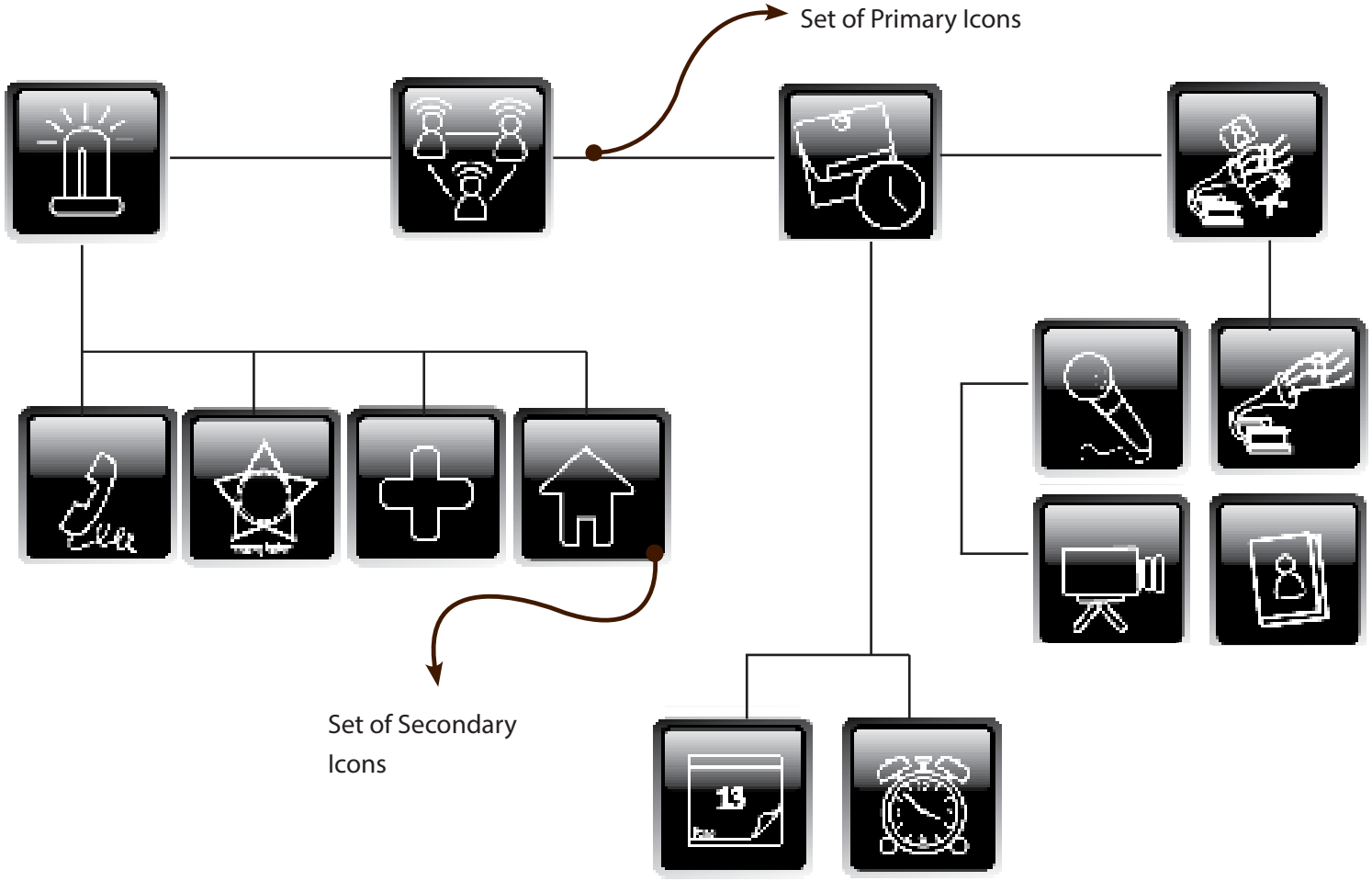
Iconic interfaces helps in easy mental mapping as the user can easily relate with it and thereby can easily operate the device.

6.6 Icon Study

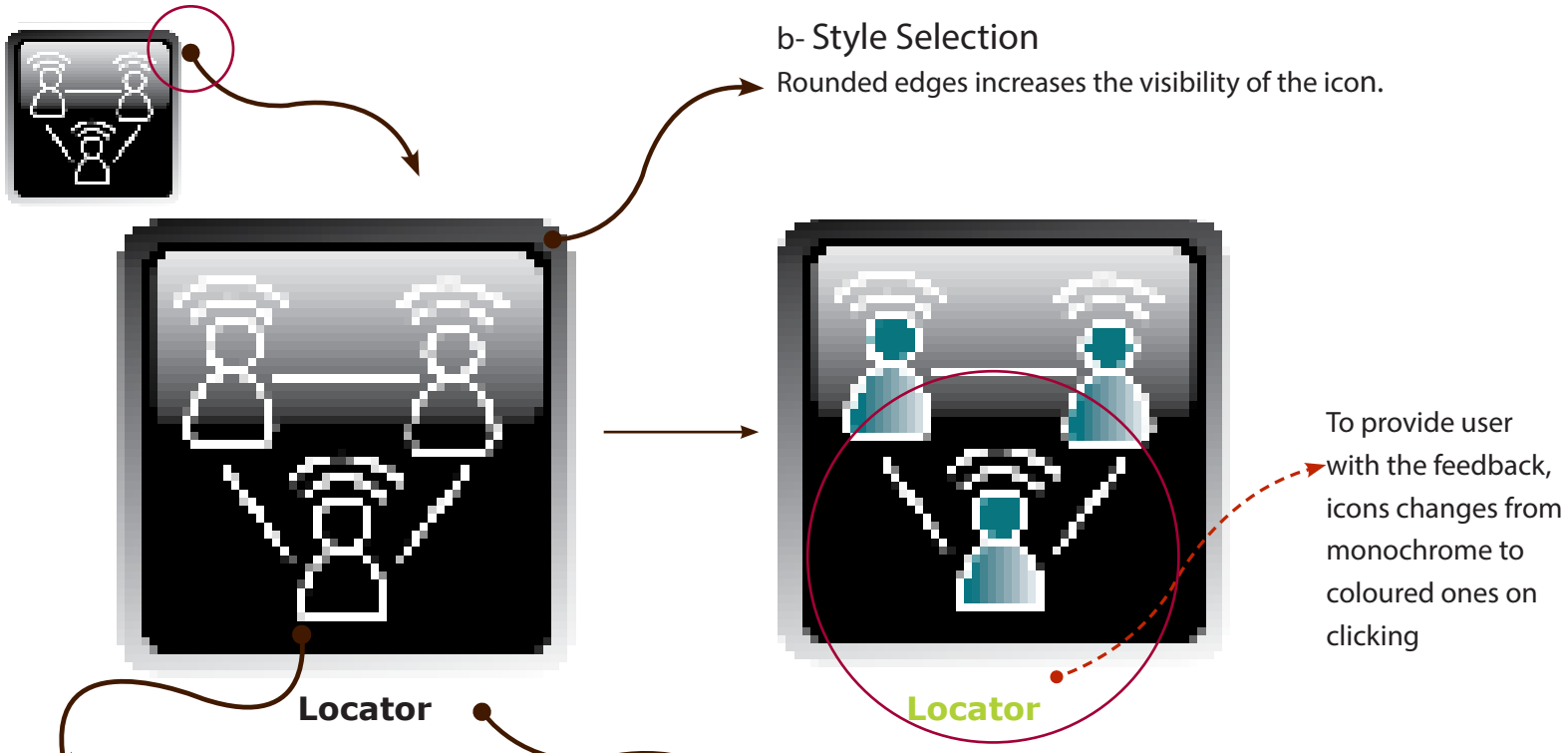
After deciding on keeping icons, supported with the text on the display screen, it was essential to conduct a study on the existing icons and keeping those in mind, come up with a set of icons which would be legible as well as easy to relate.

Function	Existing Set of Icons				
Emergency					
Media					
Help line					
Reminders					
GPRS					
Voice Search					
Alarms					

6.6.1 Icon Design



6.6.2 Icon Design Decisions



6.6.3 Icons for the device

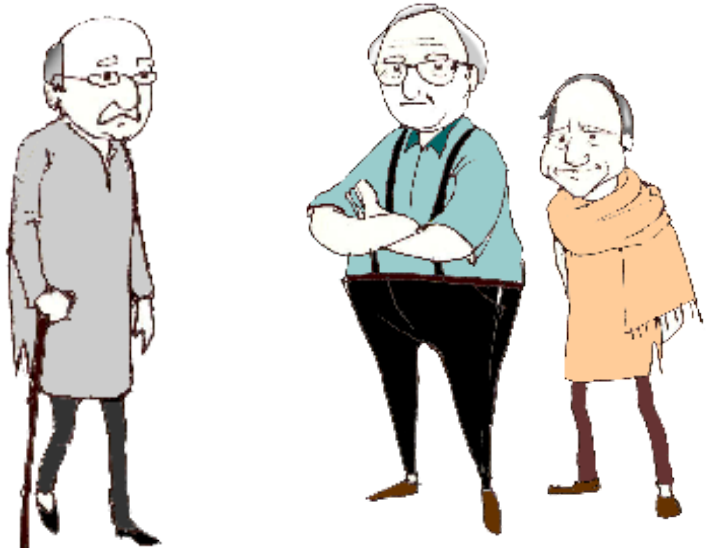
6.7.1 Design Scenario-1

Exchange of personal information:

Mr. Sharma is the new member of Powai laughing club. He has recently shifed to his new apartment in Powai. He meets two new friends, Mr. Singh and Mr. Desai and gets along with them really well.

Before leaving he wants to exchange the contacts and other information for future use, but he is not carrying his cell phone with him as he prefers to leave it at home when out for morning walks.

He looks for something to note down the contacts on, then Mr. desai shows him his 'Sampark' device which he confuses with that of a pocket watch. Mr. Desai then shows him how he has saved all the contacts for his ease of use.

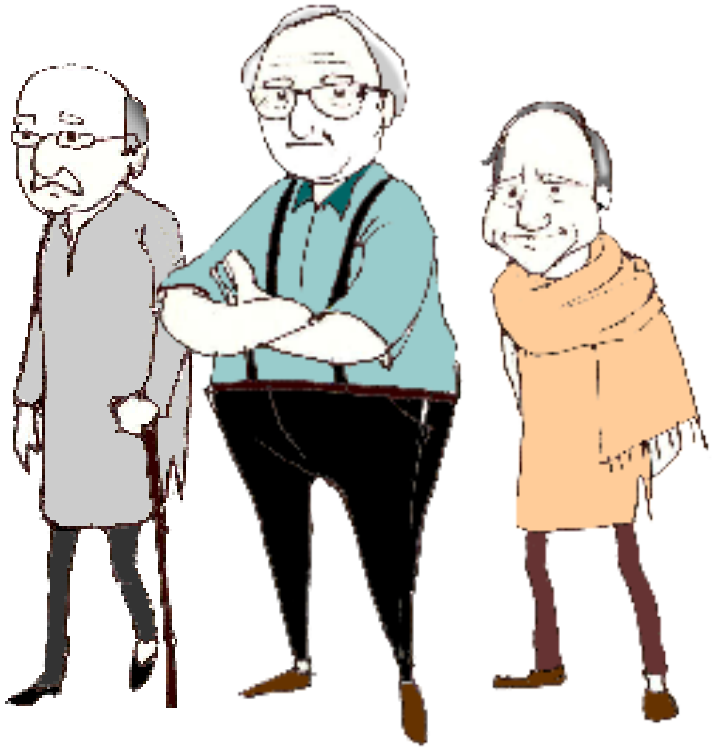


6.7.2 Design Scenario-2

Song Sharing:
Mr. Sharma, Mr. Singh and Mr. Desai are now one of the regular members of Powai laughing club. They meet daily in the park at 6:30 am.

They share a common interest in music and often talks about the songs and movies of their times.
Since long time Mr. Sharma is looking for some song of 1960's which he could listen on his personal 'Sampark' device.

Mr. Desai takes out his device and out oh his huge collection of 700 songs he finds out the song of Mr. Sharma's choice and sends on his device with many interesting facts about that song attached along with it.



6.7.3 Design Scenario-3

Group Reminders:
Mr. Desai wants to remind Mr. Singh and Mr. Sharma about joining the new yoga camp starting near Powai area after few days.

He wants to add all the details which he found about that camp from his neighbours. He uses the group reminder option from his "sampark' device and adds all the details by recording it and attaching it with the reminder and sends it to Mr. Singh and Mr. Sharma, and gets the delivery report of reminder being accepted by both of them.

6.7.4 Design Scenario-4

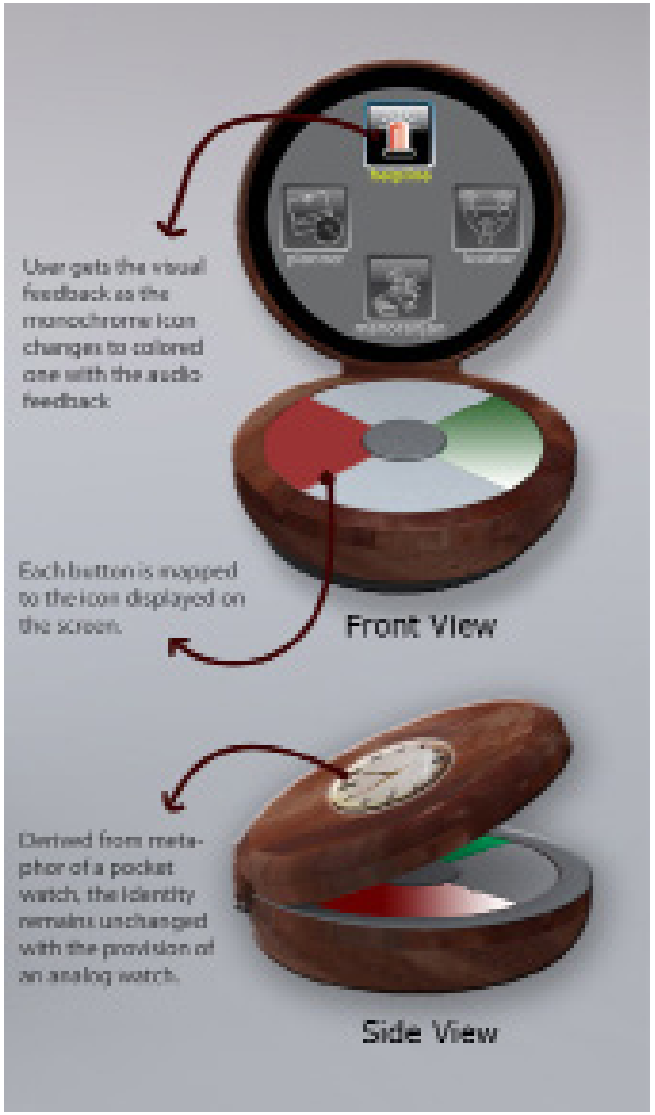
Mr. Sharma is going to the morning session of laughter club. He is not well since last few days but don't want to miss on the session.

He forgets to carry his medicines and after a while he feels acute pain in his heart. He asks Mr. Desai to inform his doctor and home about his condition and ask for immediate advice.

6.8 Sampark and Mobile phones

Deciding on a device for communication, when already we have mobile phones existing in our daily life, was based on several considerations.

Mobile phone is a device which is more generic based and it comes with all the features and functions which are specially designed to empower the youth. More the functions are, more complex it becomes to use. To analyse further a basic study of mobile phones were done to look into the feasibility of proposing a separate device for communication.



6.8 Sampark and Mobile phones

Features: Due to various feature available, the complexity of usage increases as the user has to dig deep to reach to the right information

Usability: using keypad becomes difficult for people with growing age to decreasing finger strength, visibility and shaking hands.

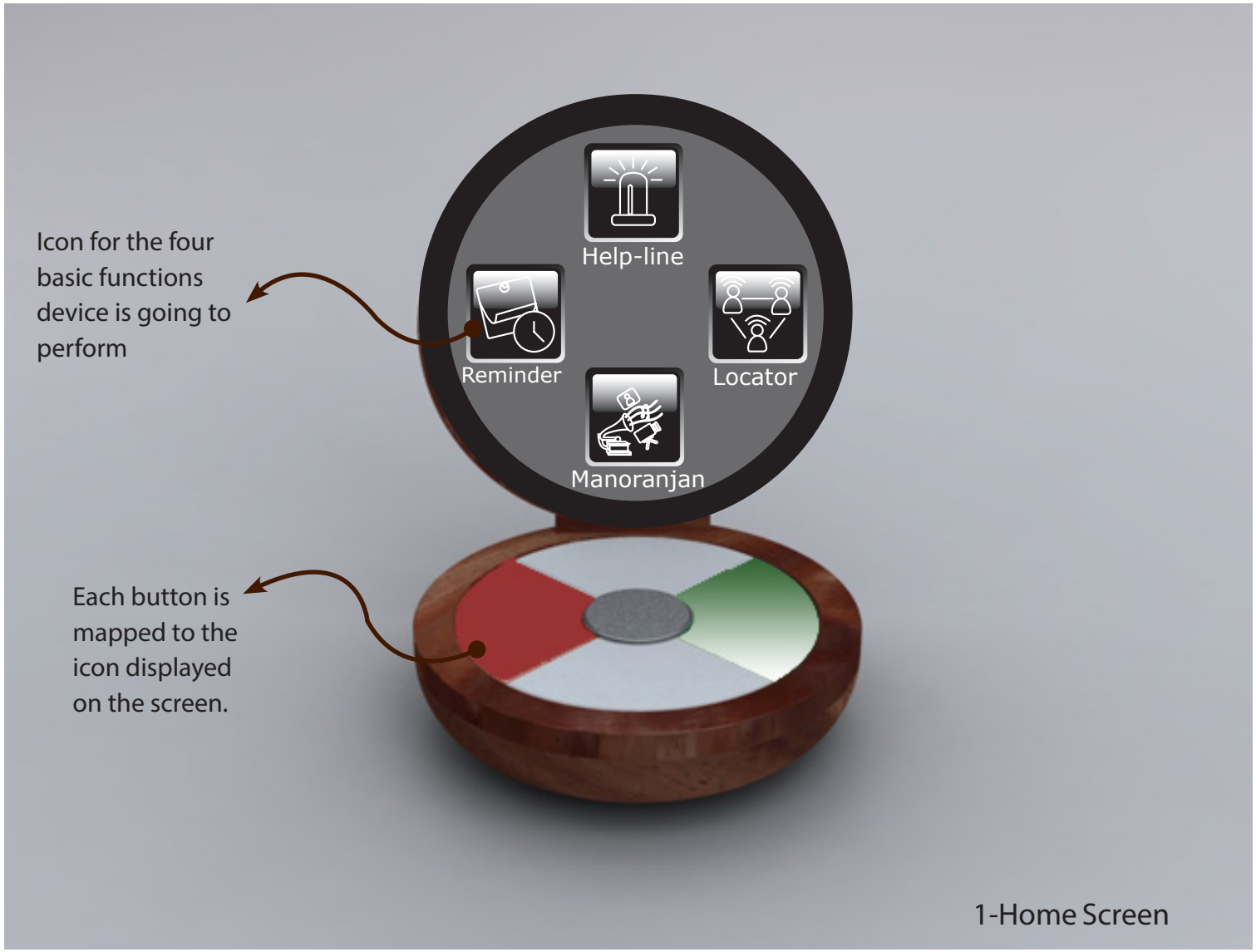
User group: Mobile phones are generic designs aimed at empowering the younger generation by providing more technology in their hands.

Features: All the essential features which an old person would require in his daily lifestyle were implemented, removing all other features which are of no use to him.

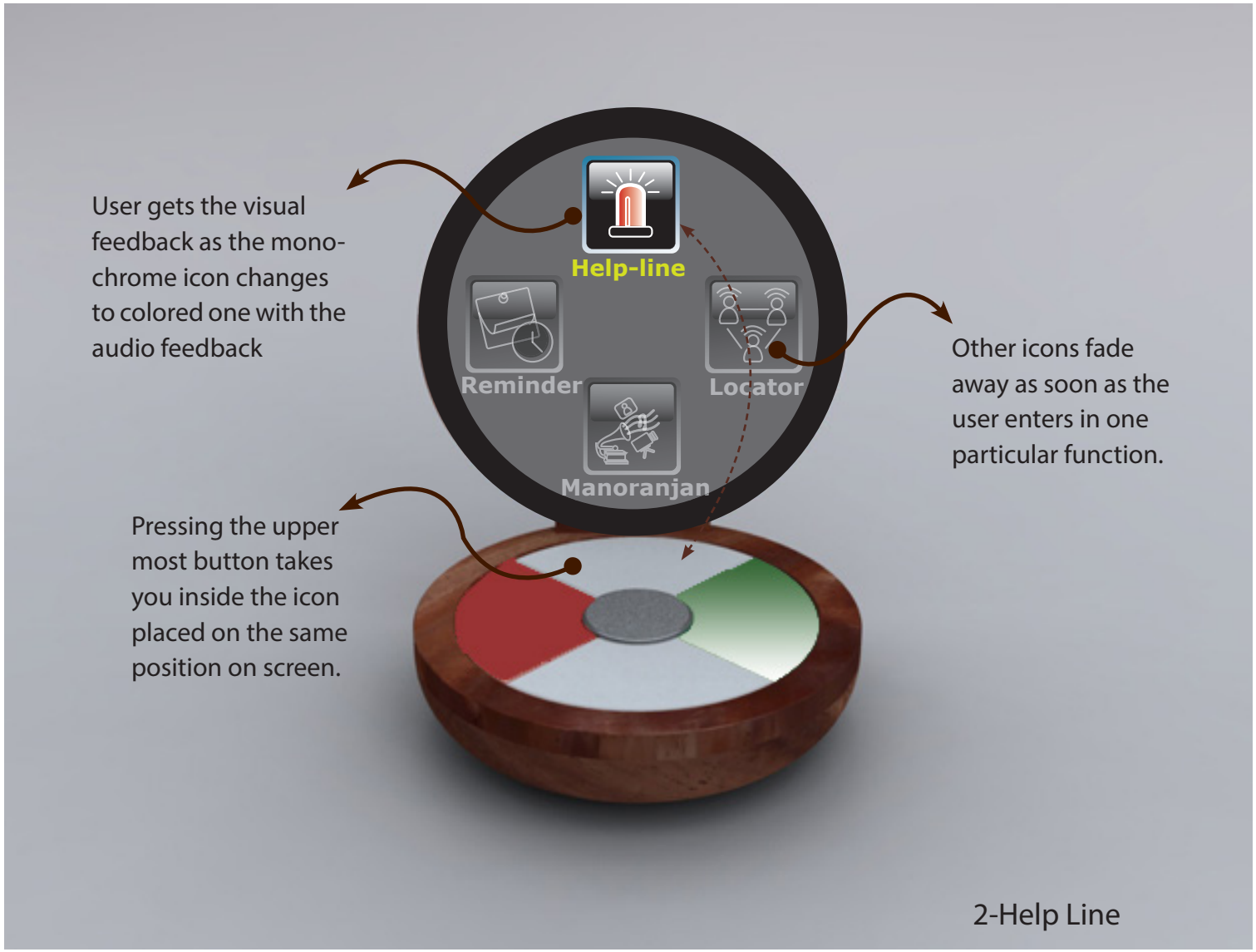
Usability: User gets Visual and audio feedbacks at each stage, reducing chances of errors. Giving four buttons to operate makes it further more easy to navigate.

User group: The device is more elderly centric designed specially for them keeping in mind all considerations and old age problems.

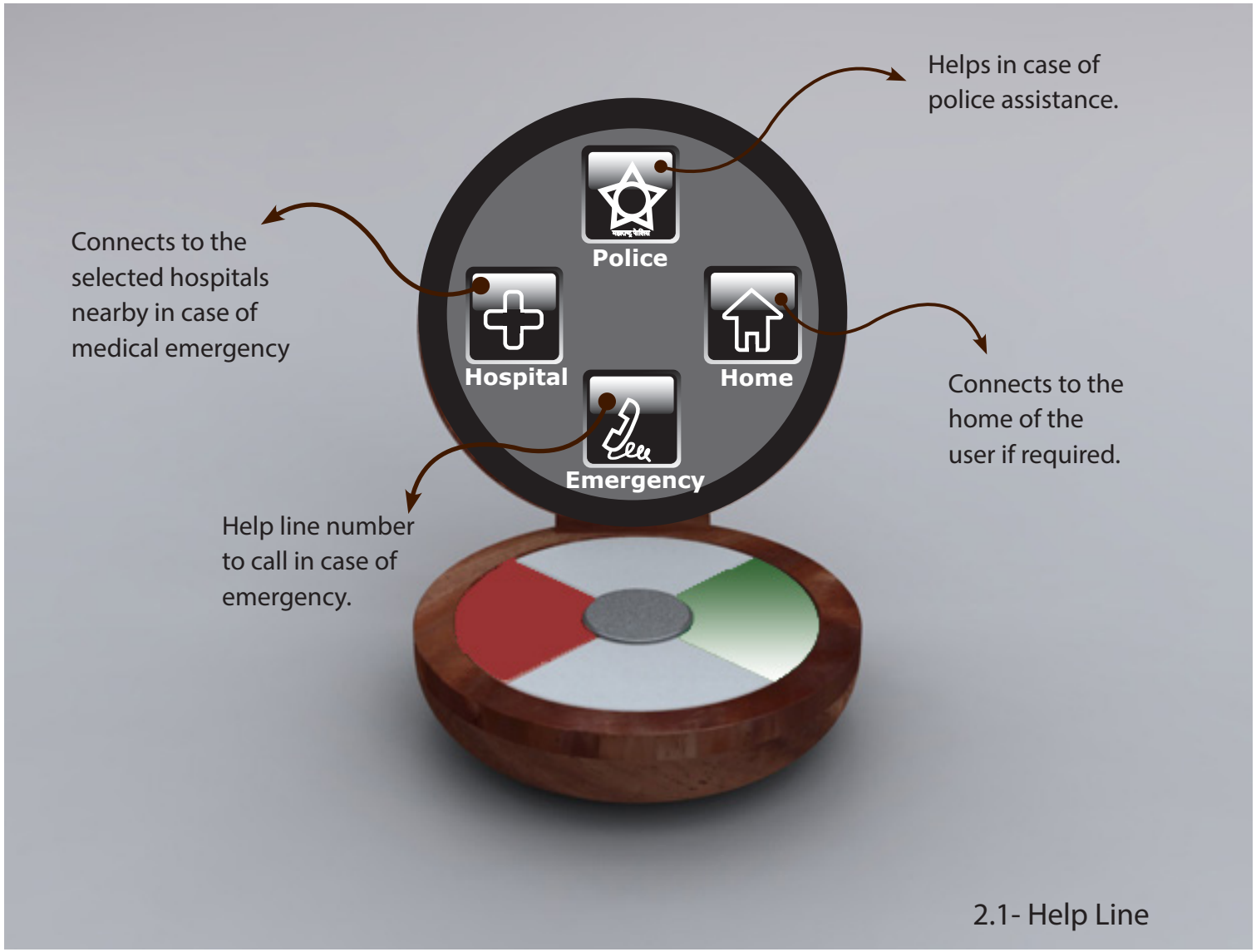
7.1 Final Prototype



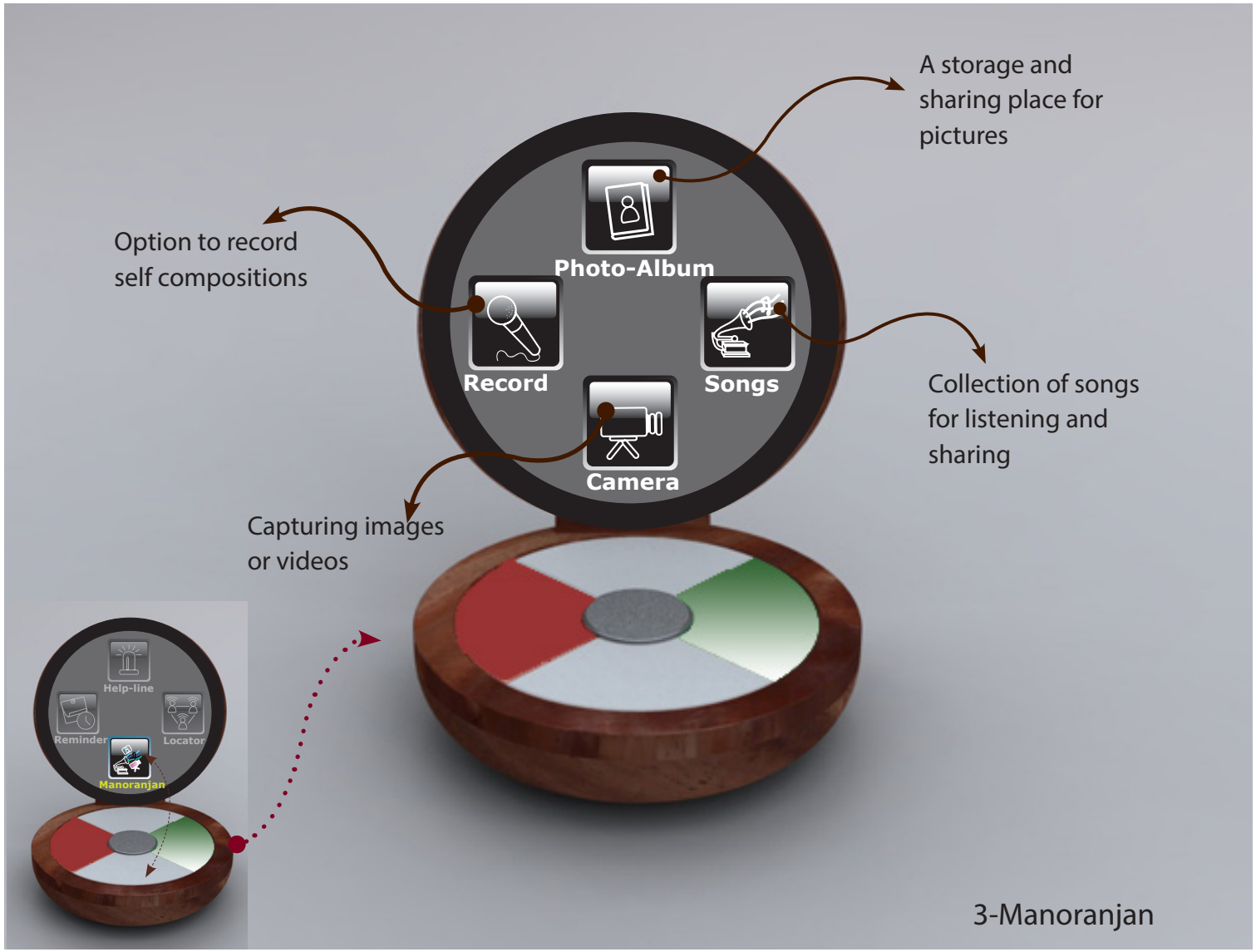
7.2 Final Prototype



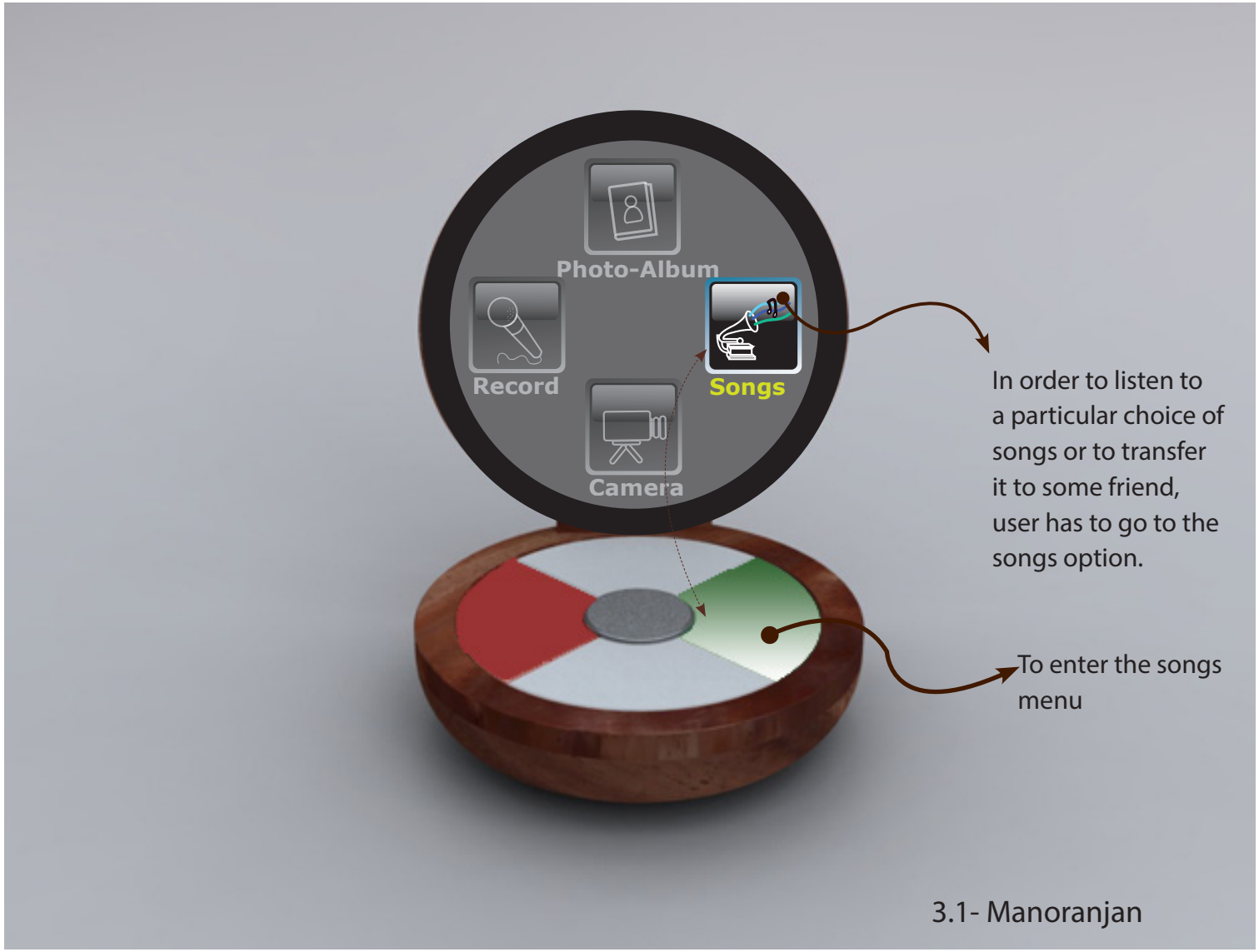
7.3 Final Prototype



7.4 Final Prototype



7.5 Final Prototype



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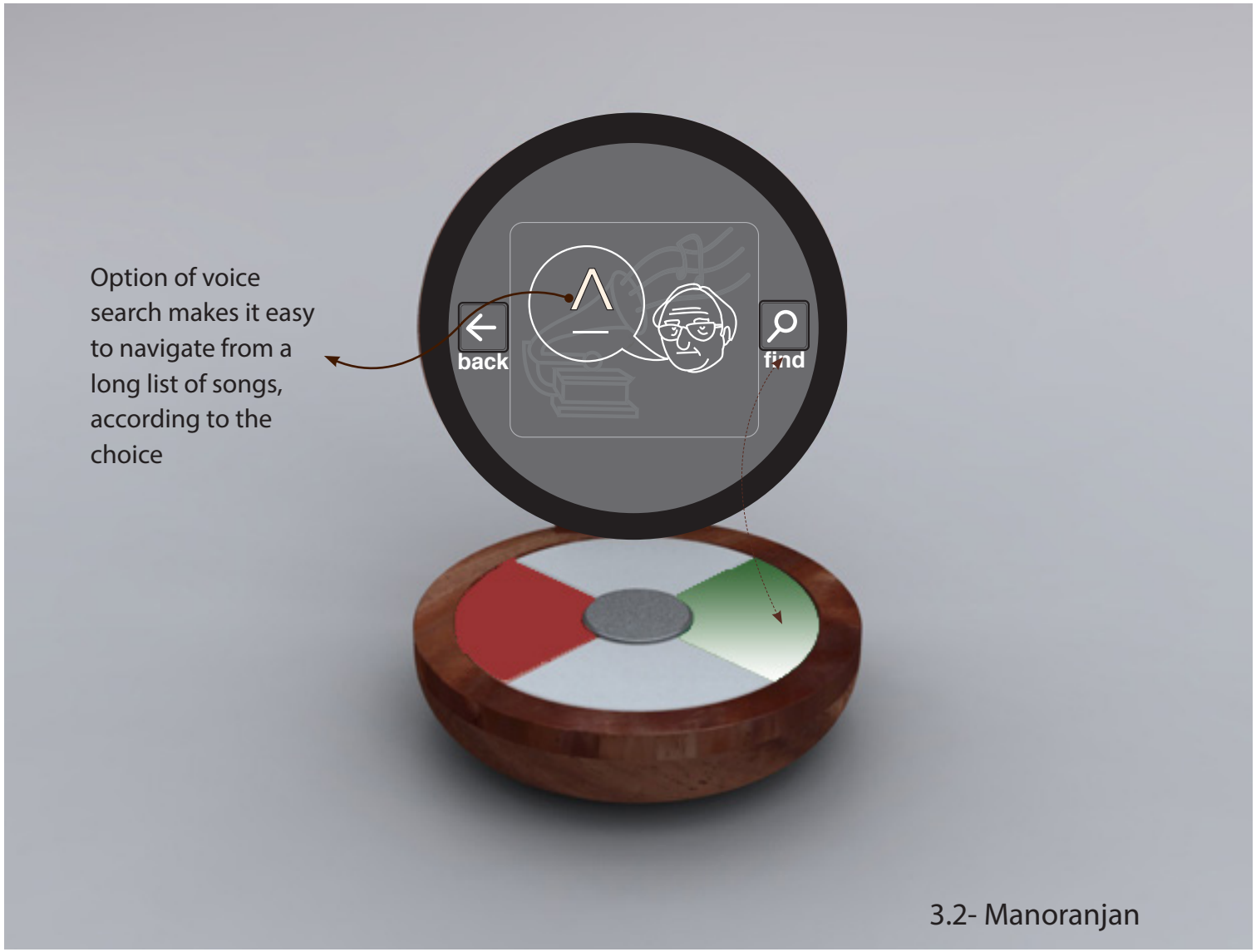

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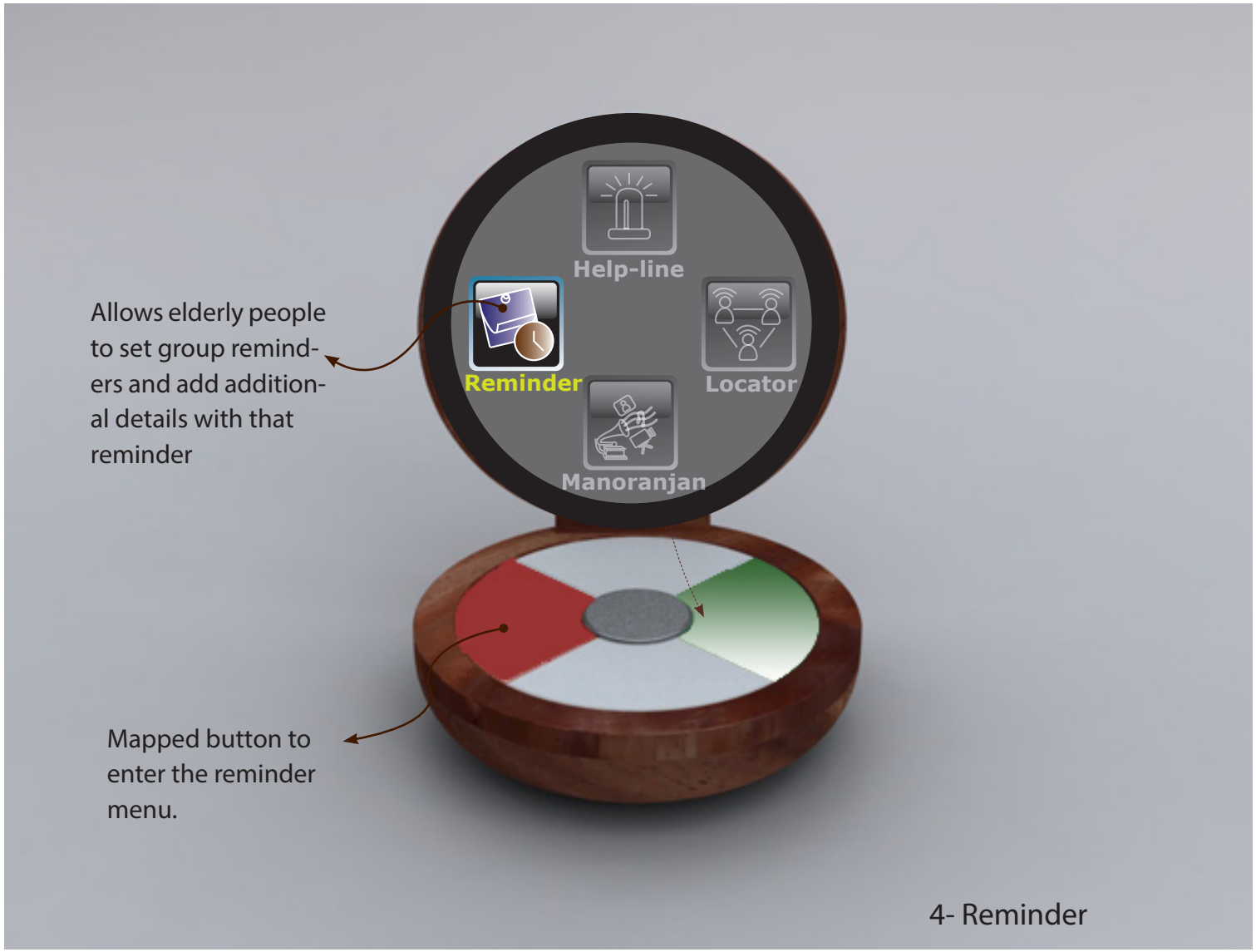

Epilogue

" No matter how old you get, if you can keep the desire to be creative, you're keeping the man-child alive."
— John Cassavetes

Designing for Elderly people is not only a challenge but also the need of an hour. Introducing a bit of technology will only empower them to feel good about their age.

The device could be carried around anytime and anywhere and in turn would make things much more easier for the elderly people.

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