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P2

Designing Fun Activity for making Indian Senior Citizens Physically Active

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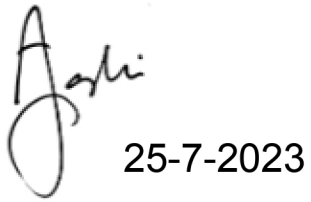
Approval Sheet

Interaction Design Project 2 titled “Designing Fun Activity for making Indian Senior Citizens Physically Active” by Apoorv Anurag (Roll Number: 216330001) is approved for partial fulfilment of the Masters in Design Degree in Interaction Design at the IDC School of Design, Indian Institute of Technology Bombay.

Guide: 

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Content

Abstract

Percentage of elderly population is increasing in India and around the world. To avoid potential pressure on medical facilities in the future, it is essential to do preventive interventions in elderly care. One way is to encourage them to be more physically active.

One design intervention that can help them make this mundane task more enjoyable is creating fun and motivating physical activities. In this project, we look forward to designing gameful walking activity for seniors with existing health and fitness technologies. We aim our design at older adults 65+ years of age who can walk around independently and do not require special supervision. We aimed to make walking, a form of moderate-intensity activity, fun and engaging for them.

Our research found that older adults have a significant interest in religion and spirituality. In this project, we limit our scope to the Hindu religion and focus on the context of pilgrimages in India. In many of these places, people have to walk a long distance and have multiple mythologically significant spots on the way or around it. We took that context and made a fun smartphone application-based activity around it. Older adults can play it in a group or individually. It is called '**Gaman' (गमन)**. In Hindi, it means 'going' or 'traveling.' The pilot evaluation showed that older adults found it fun and said it could effectively motivate people and would like to do this activity again.

Keywords

Physically Active (PA), Pilgrimage, Gameful Activity, Fun, Engaging

Introduction

a. Problem Space

The world is becoming older:
With an increment in average life expectancy and decreased birth rates in India and most countries in the world, the population percentage of older adults (65+ years old) is increasing. The rate of 65+ years of aged adults in India has been rising as shown in the figure (NSO report, 2021 [2]).

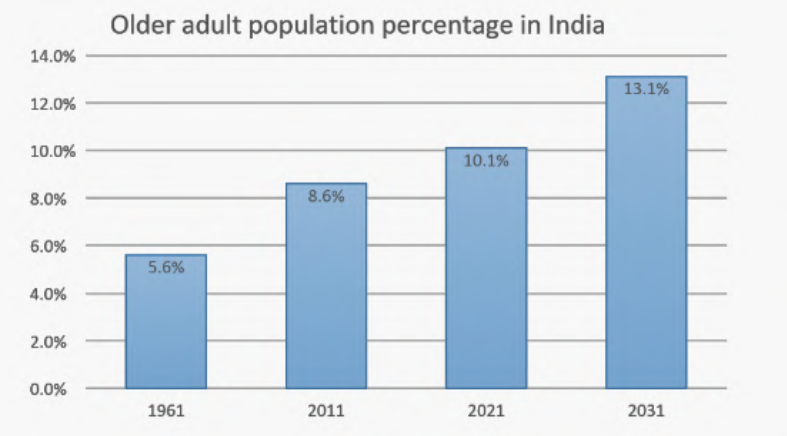


Fig 1: Older Adult Population Percentage in India

Making elderly physically active is important:
This trend will burden working-class people, whom these elderly will depend on. This rise will also lead to an extra load on health and medical facilities and expenditures. Preventive interventions are required where elderlies can be encouraged to participate in self-care activities so they don't get dependent on their family soon.

It is to be noted that even 65+ aged people have varied capabilities. Hence, if we want to create something for them, we should consider their physical constraints and their behaviours.

Importance of fun in the intervention:
Our research informs that many older adults, especially in urban cities, are interested and more open for being physical active. However, they need better motivation to do it regularly. Changing into a new habit and getting used to taking out time to do physical activity looks tedious and cumbersome initially to many people in this age group. To break that initial barrier, we aim to make routine health and fitness activities for the elderly engaging and fun by gamifying them. Many research studies have shown that gamification helps the people maintain their health by being physically active. Also we know that behaviour changes come gradually. So, our fun activity should challenge them but not frighten them when the level goes harder.

Issues with current fitness technologies for elderly:
Research (Laranjo et al., 2021 [3]) suggests that interventions using apps or trackers seem to be effective in promoting physical activity. According to Méndez et al. 2019 [4], many step-target-based activities exist on fitness applications, but most are aimed at younger audiences and include their interests. Interests and motivations are different for the elderly compared to the younger population. Having extrinsic motivation, such as rewards in the form of coins or daily streaks, might not motivate the elderly. Their intrinsic motivations should be explored.

b. Existing Work

This project will take forward the work of **Ms. Pallavi Rao**, who is pursuing a Ph.D. at IDC School of Design. She has been working on the topic of **'Designing Technology Solutions to Support Routine Health & Fitness of Indian Older Adults'** under the guidance of Prof. Anirudha Joshi, since 2020 and has till now written following **three research papers** on it:

1. Design Opportunities for Supporting the Elderly in India in Managing their Health and Fitness Post-COVID-19 (India HCI'2020). [5]
2. Wearable Activity Trackers in Managing Routine Health and Fitness of Indian Older Adults: Exploring Barriers to Usage. (Mobile HCI'2022). [6]
3. The Role of Technology in Supporting Routine Health and Fitness of Indian Older Adults: Experts View and Technology Review. (To be published.)

Main findings from these research works are as follows:

1. Motivation for older adults to do physical activities is to remain independent.
2. Older adults often are quite confused and have a lot of queries about how to manage their fitness level.
3. They are not very physically active. Many people think just doing their daily activities is enough for them to be fit.
4. They say fitness technologies are for youngsters and not for them. They perceive these technologies to be very technical and complex to use.
5. Most of them use smartphones only for communication and content consumption for entertainment purposes.
6. Social media including YouTube, TV, doctors, and printed materials are their primary sources of information.

c. Selected area for my project:

Ms. Rao had identified one of the design areas as, ***Incorporating fun and gamification*** into designing technology solutions to support the routine health and fitness of older adults. I chose that as my intervention area.

Barrier identified	Design Recommendation
Change in the tracker / phone	Synchronisation of old data with the new device
Older adults lack knowledge in performing tasks	Short how-to videos
Continuous version updates	LTS version of trackers & connected apps
Usage of English in training videos	Language personalization
Older adults not able to achieve the step goal everyday	Margin along with the step goal
Apps do not provide weekly/monthly/yearly achievements of physical activities	Weekly/monthly/yearly achievement summaries
Older adults not able to see the steps walked (while walking)	Voice prompts
Older adults find difficulty in inputting Text	Voice input
Older adults come across many usage problems	Q&A chatbot

Fig 2: Design Recommendation of some identified barriers in fitness technologies [5]

Secondary Research

Based on the area that I chose I proceeded with secondary research. The major findings are as follows:

A. STAGES OF BEING ELDERLY

WHO defines a person as 'Elderly' if they are 65 or more years old. All these elderly can't have the same physical activity plan. Hence it makes it important to understand the different stages of being elderly. Many experts across the world generally break down the aging process into 5 stages [7]:

1. **Self-Sufficiency**: Elderlies can live independently and can complete their activities of daily living with ease, without any assistance.
2. **Interdependence:** Elderlies are dependent on their family for a few things, but they can walk and do many activities on their own.
3. **Dependence:** Seniors can no longer live on their own safely. Cognitive decline, physical health problems or a combination of the two create immediate safety risks.
4. **Crisis Management:** When your loved one needs immediate medical support. They must either live in a skilled nursing facility or receive extensive professional care at home.
5. **Almost End of Life**: At this point, the senior is nearing their final days. Some older adults choose to stop receiving medical treatment and enter hospice care.

B. HOW MUCH WALKING IS NECESSARY

According to WHO, older adults are recommended to perform at least 150 min of moderate physical activities, like walking, (at least 30 minutes of moderate-intensity activity five times per week) or 75 min of vigorous PA per week, and muscle-strengthening activities at moderate intensity 2 times per week. In addition, they should do balance, coordination, and functional exercises 3 times per week.

The following page contains the table which has exercises recommended for optimal aging and maintenance of functional capacities in older adults by the International Conference on Frailty and Sarcopenia Research, 2021 [8].

Fig: Classification of exercises in the list

	Resistance Training	Aerobic Exercise Training	Balance Training
Frequency (days per week)	2 – 3	3 – 7	1 – 7
Volume	1–3 sets of 8–12 repetitions, 8–10 major muscle groups	20 – 60 minutes / session	1 – 2 sets of 4 – 10 different exercises emphasizing static and dynamic postures
Intensity	Start at 30–40% of 1RM and progress to heavier loads of 70–80% 1 RM (15–18 on Borg Scalea) 1–3 min rest between sets Power training at 40 – 60% of 1RM	12–14 on Borg Scale[a] (55–70% heart rate reserve or maximum exercise capacity)	Progressive difficulty as tolerated[b] Narrowing the base of support Perturbation of ground support Decrease in proprioceptive sensation Diminished or misleading visual inputs Movement of the centre of mass of the body away from the vertical or stationary position Dual tasking: adding a cognitive distractor or secondary physical task while practising a balance task
Specific Physiological adaptations	• Strength • Power • Hypertrophy • Endurance • Maximal aerobic capacity	• Maximal aerobic capacity • Sub-maximal endurance • Cardiac contractility/stroke volume • Peripheral oxygen extraction • Arterial stiffness • Heart rate variability	• Dynamic stability
Exercise examples	• Multiple and single joint exercises (free weights and machine) with slow to moderate lifting velocity • Bench press and squat • Knee extensions and knee curls • Exercise selection can be varied through alterations in body posture, grip, hand and foot stance, unilateral vs bilateral exercises • Once body weight no longer serves as a sufficient source of overload, additional resistance can be provided by machines or free weights as needed to ensure progression.	• Dancing • Cycling • Hiking • Jogging / long distance running • Swimming • Walking with change in pace and direction • Treadmill walking • Stair climbing • Step-ups • Seated stepping • Recumbant cycling May start with 5–10 mins and progress to 15–30 mins. The intensity is proportional to heart rate and/or perceived exertional scales if on B blockers or has pacemaker and can be increased from moderate to vigorous depending on fitness.	• Tai Chi • Standing yoga or ballet movements • Tandem walking • Standing on one leg, stepping over objects, climbing slowly up and down steps • Turning • Standing on heels and toes, walking on a compliant surface such as foam mattresses • Maintaining balance on a moving vehicle, such as a bus or train • Dual-tasking: adding cognitive distractor while maintaining balance Many conditions in older adults require balance training before aerobic exercise/ gait retraining

Fig: Exercise recommendations for optimal ageing and maintenance of functional capacities in older adults [8]

C. UNDERSTANDING FITNESS TECHNOLOGIES

Fitness Technologies include **fitness applications** in smartphones (like Google Fit, Samsung Health, etc.), **Wearables Trackers** (like MI Smart Band and Fitbit), and many kinds of **Exergames**. These technologies have many positive aspects regarding their usage, such as

- One can track their health and fitness-related information.
- One can manage and keep a record of their daily healthy habits.
- One can socialize and connect with others.
- It encourages healthy behaviour among the users.
- It Improves access to healthcare information, and self-management of health for older adults

However, Ms. Rao's research suggests that fitness technology adoption & its usage by Indian older adults is low. Most of the elderlies don't have Wearable trackers and access to digital exergames. The common fitness asset which is also getting the most popular among them is the smartphone. Although fitness applications installed in these smartphones too have the following limitations:

- Most of these applications do not comply with the standard needs and capabilities of the elderly.
- Almost all of the current research on technology for routine health focuses on youngsters only
- They don't take into account the elderly's technology anxiety and their resistance to change.
- Social context that works for western culture may not work for Indians and others

To further understand the data present in existing fitness technologies, I shortlisted some of the most popular mobile applications from the google play store for android. I used the criteria of Popularity, Ratings, Total no of Reviews, and Number of Downloads. The image below shows the list:

S. No.	Application	Ratings	Total Reviews	Downloads
1	Google Fit	4.1	5L	10Cr+
2	Zepp Life	4.1	25L	10Cr+
3	Step Tracker - Pedometer	4.8	5L	1Cr+
4	Step Counter - Pedometer	4.8	12L	5Cr+
5	Step Set Go	4.4	2L	50L+
6	Samsung Health	4.2	13L	100Cr+
7	My Fitness Pal - Calorie Counter	4.2	25L	10Cr+
8	Strava	4.3	7L	5Cr+
9	Fitbit	3.8	9L	5Cr+
10	Adidas Running App Run Tracker	4.4	12L	5Cr+

Fig: Shortlisted applications

From this, I got to know what data they present and their significance of them.

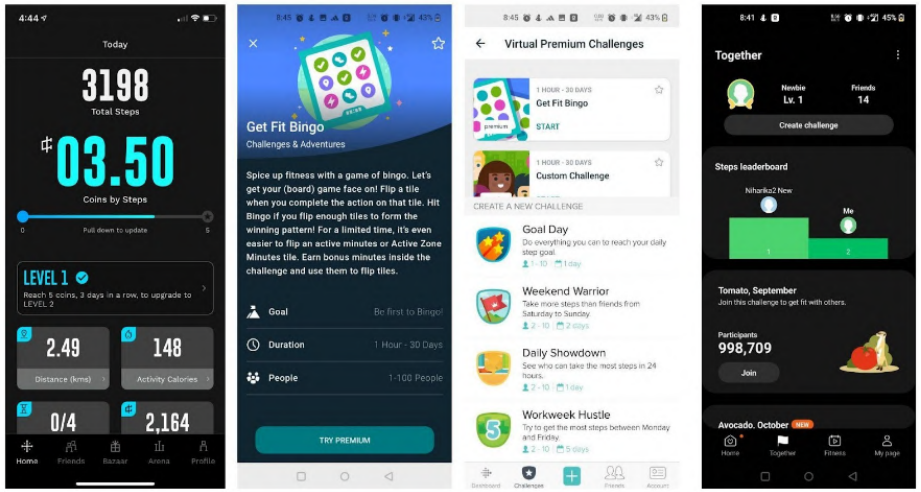


Fig: Some of the activities on shortlisted fitness apps

I also looked into how fun activities in the earlier shortlisted apps. Most of them had streaks feature and gave rewards as coins through which we can buy digital gadgets and other youth-centric products. Competitiveness was promoted majorly. These were all extrinsic motivations for the elderly and might not attract and function for them.

D. WHAT IS A GAMIFIED ACTIVITY?

As per the game design, Swayam Course named 'Demystifying Board Game Design' by Prof. Uday Athavankar and Prof. Prasad Bokil [9] gamified activity refers to using concepts and game elements in non-gaming activities and events. The idea hinges on making activities playful and creating competition to improve engagement. It has found applications in diverse areas like improving learning to increase productivity. It has found success in getting people to perform difficult activities that they are disinclined to do on their own.

A fundamental difference between a game and gamified activity may lie in the target of the activity involved. While the main aim of games is to entertain the user, it is to change the attitudes and behaviour of the user for the latter.

Primary Research

A. OBJECTIVE

1. To closely understand the motivation of people who do some sort of physical activity (PA) daily, what kinds of physical activity they prefer doing and what the factors affecting these exercise routines are.
2. To meet people who are not very regular in doing PA and understand their interests and how they usually spend their time throughout the day.
3. I also wanted to know how the dynamics work when multiple elderlies walk together in a group.

B. USER INTERVIEW

I conducted primary research through **individual interviews with seven older adults**. The participants consisted of five males and two females, ranging in age from 65 to 72 years. Among the participants, some engaged in regular physical activity, while others expressed a desire to stay active but faced various obstacles that hindered their ability to do so.

Additionally, I had the opportunity to meet with **a group of approximately ten elderly individuals** who gather regularly in the evenings. This group comprised entirely of males and ranged in age from 65 to over 85 years.

C. METHODOLOGY

To conduct my research, I prepared a comprehensive questionnaire encompassing all the aspects I wanted to inquire about. However, due to the constraints of being on the IIT Bombay campus, it was challenging to find older adults in close proximity. As a result, I resorted to conducting phone interviews with a few individuals.

Additionally, I made efforts to connect with older adults by visiting the spot on campus where they typically engage in morning and evening walks. Fortunately, I encountered numerous senior citizens who were actively walking on the track. On several occasions, I joined them during their walks, introducing myself and explaining the purpose of my project. I sought their permission to record their voices or take notes regarding their inputs. Throughout the process, I strived to maintain an informal tone, aiming for the interviews to resemble casual discussions rather than formal interrogations.

Fig: Me with a group of senior citizens on their walk

D. QUESTIONNAIRE

I made the list considering the master-apprenticeship model of taking interviews in my mind. The questionnaire is as follows:

For people who are regular with their fitness activity:

1. How do you keep yourself physically active?
2. What is the best thing that you like about it that keeps you motivated?
3. What do you think many people of your age group do not engage in any sort of fitness activity?
4. How can they be on board with such activities?
5. Do they find doing such activities boring? How can we make it interesting?

For people who are not regularly doing any fitness activity:

1. When was the last time you did some fitness activity?
2. Is there any barrier that stops you from being active?
3. Why do you think these activities are important?
4. What can be done to remove these barriers?

Common Question/ Topics:

1. What is your daily routine?
2. Household activities that you do?
3. What do you do in your free time?
4. Discussion about likes and dislikes.
5. People in their families and equation with them, especially grandkids.
6. Interest in games and social activities?
7. Proficiency with smartphones.

E. FINDINGS

1. It was found that most of the users are walking as a regular activity and usually go on morning and evening walks because they want to feel fresh the entire day and remain energetic.
2. Talking with friends is a big motivation for everyday walks for most people.
3. Many of them said that walking alone that too without any cause is boring.
4. Many of them had problems understanding the English language.
5. Most of them like to take decisions independently and don't want to be dependent on their families.
6. Most of the elderly had religious interests and had visited many religious places like Vaishno Devi temple, char Dham yatra, etc.
7. Watching TV (news, religious serials, cricket, ayurvedic channels), listening to the radio, playing with grandchildren, and helping with small households are the major hobbies.
8. Most of them were not very tech-savvy. They used phones only for calling Youtube and sending WhatsApp messages.
9. Different elderlies have different capabilities for doing physical activities. Many of them fear talking on the phone or watching something on the screen while walking. They feel they will fall.

10. The age range of the members in an elderly group is wide. The group I met had a person 85+ years of age.
11. The elderly in the group like to collaborate among themselves rather than competing, which is generally present in younger generations.

What do older adults like?

I also asked family members of some of the elderly about their interests and what all things can be motivating for them. The following mental model was developed after talking to all of them.

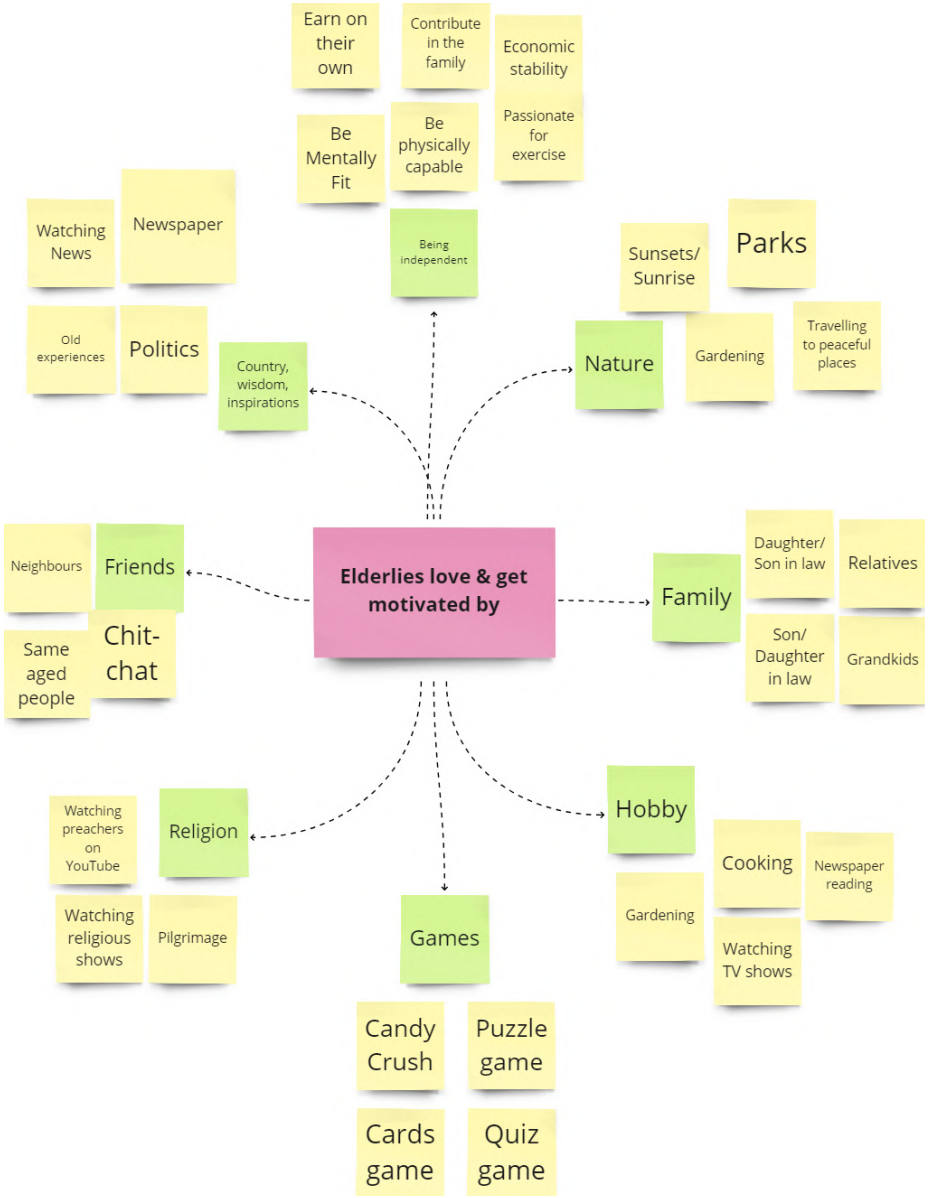


Fig: Mapping of various likings of elderlies

Collective Findings from the Research

Likes

1. Likes to socialize with known and unknown people.
2. Like morning or evening walk around nature.
3. Relatedness with family, especially grandkids.

Needs

1. Want to know about their fitness progress.
2. Want to stay fit and not be a burden on their family & reduce the chances of medical illness.
3. Proper resting time.
4. Know about their surroundings.
5. Safe exercising area.
6. Awareness of the importance of physical activity.

Pain points

1. It feels boring, and uninteresting to start exercising compared to other activities.
2. Fear of falling.
3. Don't know how much they should walk or do other exercises.
4. Boring to walk alone.
5. Boring to walk without any reason.
6. Family members have their own busy life.

Constraints

1. Not very tech-savvy.
2. Many elderly live away from their family.
3. Physical body pain and limitations.
4. Don't prefer watching or listening to something on the phone while walking.
5. Different elderly have different physical capabilities.

Motivation

1. Better physical health and performance.
2. Feel fresh the entire day.
3. To stay independent and have self-respect.
4. To be able to contribute to family activity.
5. Socialization.
6. Take part in religious activities.
7. To stay happy by doing certain hobbies
8. Entertainment

Design opportunities

*Designing a **collaborative socialization** game or activity together for senior citizens that includes their interests.*

Narrowing the scope

Considering the design opportunity we focussed on narrowing down the scope of our intervention.

Choosing the Physical Activity
From the discussions with primary users, we get to know about the most common form of exercise that they like doing and can easily do is **Walking**. We chose this activity because:

- This activity can be made challenging by gradually increasing the step counts and modifying its pace.
- Walking also can be introduced to larger user groups as it does not require extensive supervision.
- This can help in increasing socialization among older adults. Steps, pace, and other related parameter can be easily monitored by smartphones, which are quite accessible for elderlies these days.

Project Goal
To design a fun gamified activity to support routine walking for the older adults in India.

Expected Benefits
This activity can be positioned as preventive maintenance for users who are in the initial stages of being elderly. These stages are **Self-sufficiency** and **Interdependence** when the user is not much dependent on others for their living and can safely walk without any supervision.

Design Implications

- The gamified activity should be easy for the elderly to initiate physical exertion.
- It should incorporate their interests to create a welcoming and engaging experience for them.
- Socialization, both with familiar and unfamiliar individuals, should be at the core of the activity.
- The activity should be easy to understand. If it is on a digital device, it should be simple to understand and operate.
- The activity should cater to the individual capabilities of each person.

Design Strategy

After completing my secondary research and narrowing down my project scope, I researched upon making of gameful designs.

I found a research paper 'The Lens of Intrinsic Skill Atoms: A Method for Gameful Design' by Sebastian Deterding [10]. It introduces a design method that uses skill atoms and design lenses to identify challenges inherent in a user's goal pursuit and restructure them to afford gameplay characteristics motivating enjoyable experiences.

It suggests 5 steps in innovating a gameful design [10]:

INNOVATING	EVALUATING
1 Strategy	
a. Define target outcome and metrics	
b. Define target users, context, activities	
c. Identify constraints and requirements	
2 Research	
a. Translate user activities into behavior chains (optional)	
b. Identify user needs, motivations, hurdles	
c. Determine gameful design fit	
3 Synthesis	
a. Formulate activity, challenge, motivation triplets for opportune activities/behaviors	a. Identify skill atoms of existing system for opportune activities/behaviors
4 Ideation	
a. Brainstorm ideas using innovation stems	a. Brainstorm ideas using design lenses
b. Prioritze ideas	
c. Storyboard concepts	
d. Evaluate and refine concept using design lenses (optional)	
5 Iterative Prototyping	
a. Build prototype	
b. Playtest	
c. Analyze playtest results	
d. Ideate promising design changes	
Repeat steps a-d until desired outcome is achieved	
Increase prototype fidelity as playtest results approach desired outcome	

The design was developed using the series of steps. Here is a summarized overview of the process:

1. **Strategy**
   a. **Target outcome and metrics**
      i. Fun to play.
      ii. The activity helps them to be more physically active.
      iii. Engaging
   b. **Define target audience and activity**
      i. 60+ people who can walk independently
      ii. Walking / Pacing
   c. **Identify constraints and requirements**
      i. **Constraints:** Elderly can not do vigorous, sudden physical activity, Design should be simple to understand by the elderly, they should not hold anything in their hand every time, and the Elderly should be in a safe environment while walking.
      ii. **Requirements:** Affordable, Engage daily or on weekly basis, Promote socializing with friends and family.
2. **Research**
   a. **Translate user activity into a behaviour chain:** We drew a behaviour chain in form of an average user journey throughout the day.
   b. **Identification of user needs, motivation, and hurdles:** Through this chain and with our research with elderly we found these factors too.

   (These are mentioned in the images on the next page)

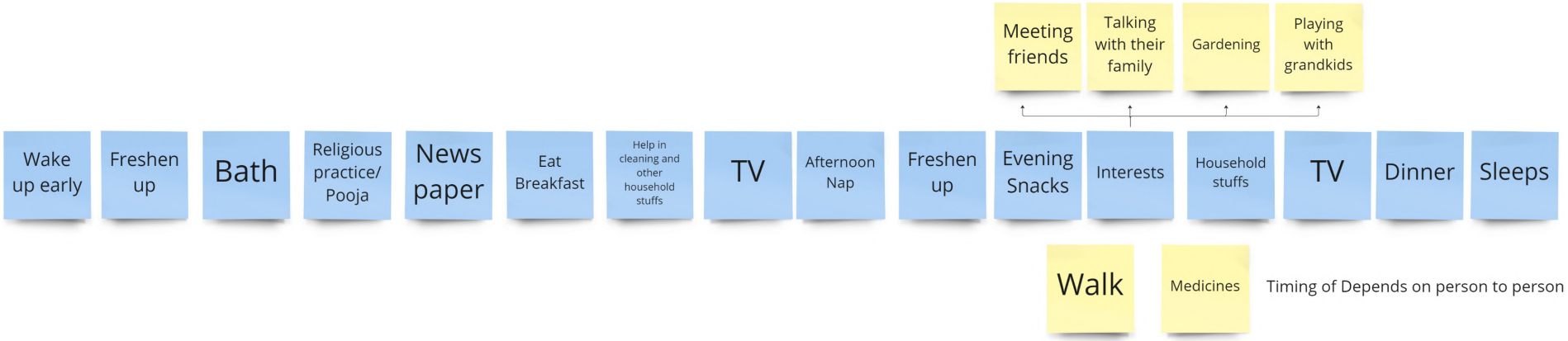


Fig: Behaviour chain in form of an average user journey throughout the day

Fig: User needs, motivation, and hurdles

c. **Determine gameful design fit**
   i. Does the activity connect to an actual user need? Yes
   ii. Is lacking motivation a central issue or opportunity (and not, e.g., poor usability)? Yes
   iii. Does the target activity involve an inherent challenge with a learnable skill? Yes
   iv. Is affording experiences of competence the most effective and efficient way of improving motivation (and not, e.g., defusing fears)? Yes

3. Synthesis

This involved making connections between what motivations energize and direct the activity, along with challenges that are inherent in the activity, and how to deal with such challenges.

Results are presented as triplets in the form **Activity > Motivation > Challenge** and serve as the main input for ideation.

a. **Activity 1: Walking a target step count**
- Motivation: Feel fresh the entire day, feel productive
- Challenges: It is difficult currently for elderly to measure the number of steps because of complicated UI of fitness apps. Also it is boring to walk alone, improper scheduling of exercise may lead to not feeling productive.

b. **Activity 2: Helping with household chores**
- Motivation: Self-respect, contributing to the family
- Challenges: Every family has a different structure, tasks, and members. Hence designing a standard gamification activity is difficult for everyone.

c. **Activity 3: Engaging with family**
- Motivation: Elderly love being with their family and especially grandkids
- Challenges: Finding common time, involving grandkids of different age groups so that the user base is not narrow, Should teach some values to these kids in return too, Collaborative game, Motivating factors for the family member needs to be explored

d. **Activity 4: Engaging similar-aged friends**
- Motivation: Elderly love socialization
- Challenges: Finding a common time with senior friends, Availability of a common space

e. **Activity 5: Watching religious content and taking part in related activities**
- Motivation: Gives spiritual strength
- Challenges: Elderly watch religious content while sitting in one place only

f. **Activity 6: Engagement through hobbies like reading the newspaper, playing crosswords, gardening, etc.**
- Motivation: Keeps them engaged, and enhances their mental activity.
- Challenge: Most of these activities are done while sitting in one place. Every elderly will have a specific liking of the activities as their hobby.

4. Ideations

I did multiple ideations based on the triplets that were identified and explored if they were feasible or not. While ideating I was continuously validating my ideas also from the end users i.e. older adults and also game design experts.

I did rough sketching of the scenarios and took the feedback. It helped me in quickly validating in the concepts.

The **Activity triplet 1 'Walking a target step count'** can be achieved by having an option of targeted walking which will promote regularly doing physical exercise among the elderly. Hence we will use this with all our ideations.

The **Activity triplet 2 'Helping in household chores'** can be a little hard to standardize with the elderly, as household work differs in every family. Some of the common household chores involving walking like buying groceries can be complicated because they can be in unsafe traffic situations while using smartphones together. Hence we will not be using this activity triplet.

Following are some of the ideations developed till now based on activity triplets 3, 4, 5, and 6:

- **Activity Triplet 3: Engaging with Family:**

The most cherished family members for the elderly are their grandchildren. They can engage in collaborative play with their grandparents while also gaining valuable knowledge from their experiences.

Creating regular physical activity with grown-up family members can be tough as most of them are usually busy in their lives. With my interaction with people around me who have been living with the elderly, I got to know that they are not able to give time to the elderly in the family every single day because of work and other issues.

a. Concept 1: Crossword Activity

In this game Elderly and a grandkid (can be another senior friend also) are walking together to find certain letters on the path of walking which can be sensed by geolocators on the fitness apps or smartphones. These letters could be used to solve to form certain words and have a crosswords competition between other pairs on a leader-board.

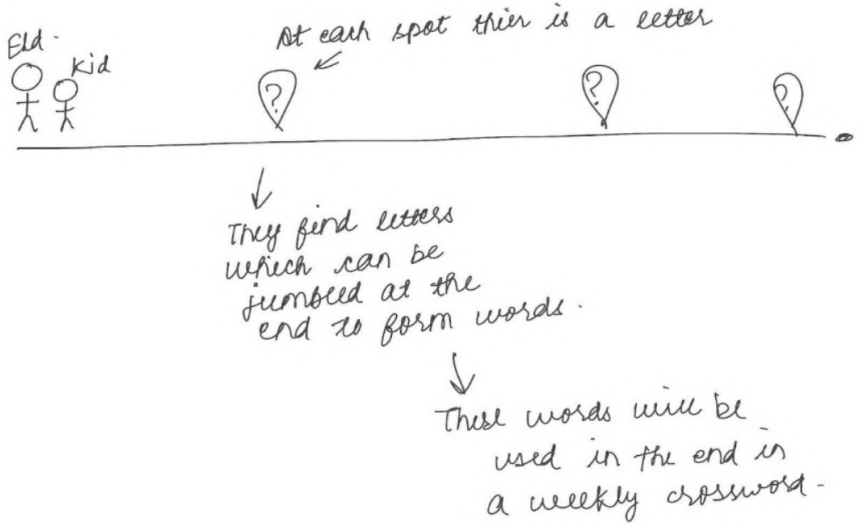


Fig: Crossword Activity rough sketch

b. Concept 2: Pocket Money Activity

In this game grandparents and grandkids of ages 4 to 12 years can collaboratively collect the pocket money of the kid on the go. They will get certain virtual coins on the way which they will collect. The same amount of pocket money will be given to the grandkid. The path and the money can be predetermined by the parents of the kid.

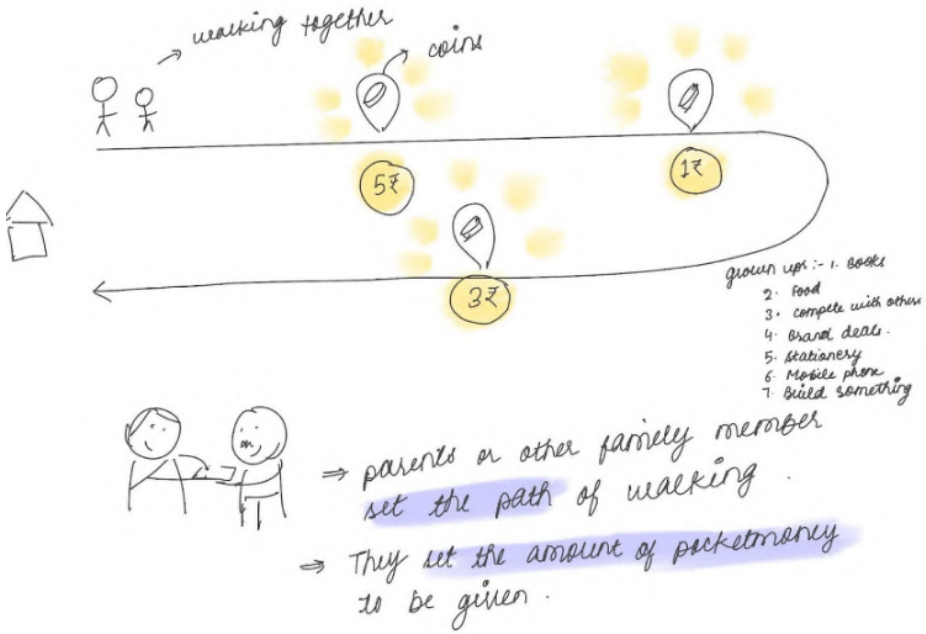


Fig: Pocket money activity rough sketch

c. Concept 4: Lamp & Kite:

In this game elderly is walking to match the pace of a metronome (a device that produces an audible click or other sounds at a regular interval, typically in beats per minute, that can be set by the user). If they are able to match the pace with the beats of a metronome, then the virtual lamp in the mobile phone with the kid keeps on being lit. They have to coordinate together to find an object inside the foggy environment in which the kid will be. He has to roam around, following certain hints and his motion will be geotagged.

Cons: This can be too complex and elderly might not relate to the objects involved.

Fig: Lamp and Kite Activity rough sketch

- **The activity of watching religious content and taking part in related activities**

Considering the primary research findings by talking with various elderly we found that elderlies are quite religious. And this religious belief increases with age. We can take this as an opportunity for motivating them in gameful activities. Following was ideation around this:

a. Concept 5: Virtual Temple:

This game will let them explore different temples virtually while they walk in real life. This will count their steps instead of distance so that elderlies can walk inside their home. If they achieve their target the video of the place will unlock through which they can know about the place.

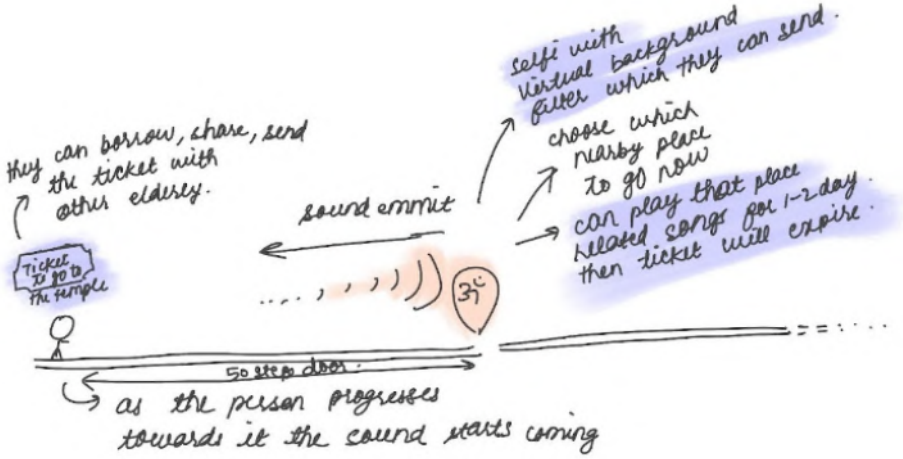


Fig: Virtual Temple rough activity

- **The activity between elder friends**

a. Concept 6: AR Ball Collecting Game:

In this activity, two elderlies will have smartphones tied to their hand. They will have to walk and collect AR balls, that they can see through their phone, present in between them. After picking they have to go back to put it inside their virtual baskets. Whoever collects their balls first wins.

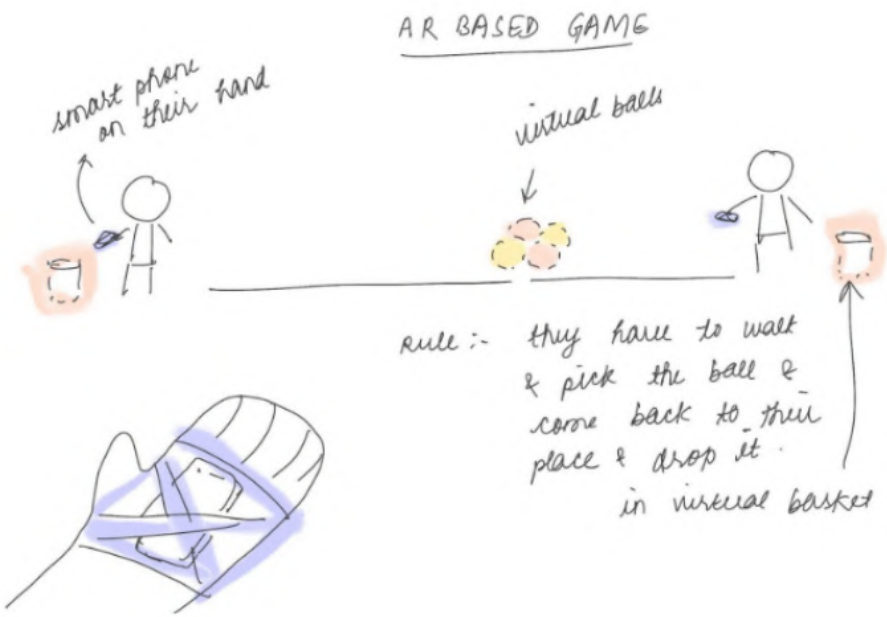


Fig: AR Ball game rough sketch

5. Feedback from the Elderly

I made scenario storyboards for these ideations and showed them while explaining them to the elderly. I asked them to give feedback. This was essential to get their preferences and remove any basic flaws that would be present inside these concepts. Two of these scenarios are shown here:

Fig: Scenario for virtual temple

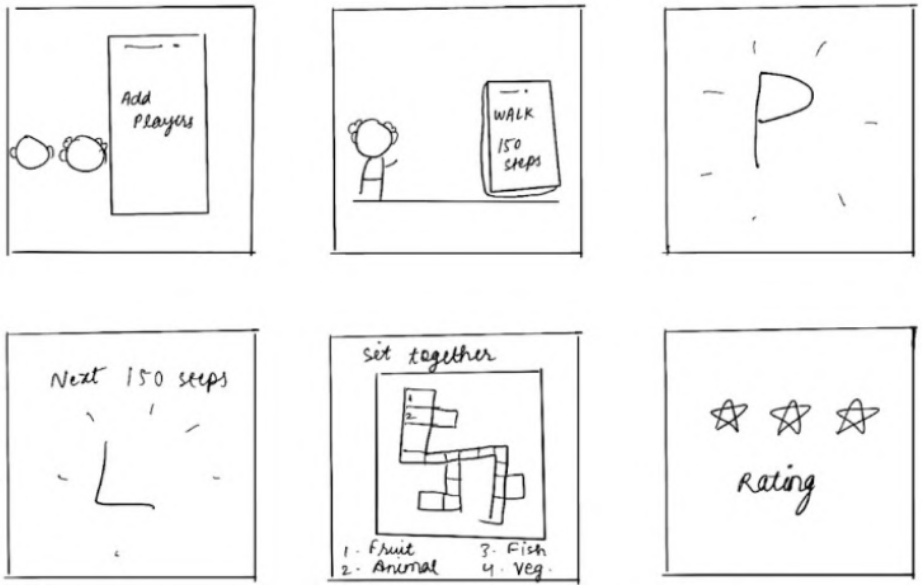


Fig: Scenario for crossword game

Following are the feedbacks given by elderlies over all the concepts:

1. Pocketmoney activity can teach negative value to the kids as it can make them learn that every good thing they are doing like spending time with their grandparents has to be monetized.
2. Many have grown-up grandkids who are busy in their life. Will be tough to motivate them.
3. Religious place activity was loved by the elderly. They said we can have historical places like Palaces too along with religious places.
4. Socialization can be included in this game to improvise it further.
5. People also liked the Jumbled words activity idea. It will be a mental exercise too.

Other Constraints:

1. Geolocated games will require continuous watching of the phone screen while walking. Many elderlies will not prefer watching the screen while walking. Hence, it is better to change the location-based target with a step counter target.
2. Crossword game- Difficult to make in the Hindi language compared to English. Having local languages can be even tougher. Also having a small mobile screen where they will be seeing the crossword would be problematic. We will be needing a larger screen like a tablet.
3. It will be difficult for elderlies to play AR games. Most of them were not able to understand it.

Since religious interest was most preferred by the elderly, we narrowed down our scope:

To design a fun collaborative socialization activity to support routine walking for the older adults in India using their religious interest.

Focussed Research: Religion and Elderlies

Secondary Research

We found that religious involvement and spirituality are associated with better health outcomes, including greater longevity, coping skills, and health-related quality of life [11]. A majority of Indian adults say religion is very important in their lives (84%). Spirituality was found to be one of the domains of the elderly's quality of life whereby being religious and spiritual could help the elderly to accept disability or psychological distress, and be satisfied with their life.

According to a survey done by the Journal for the Scientific Study of Religion, 2019 [12] - The level of religious participation is greater among older people than among any other age group. Religious pilgrimages are common across most religious groups in India.

To be noted:

We focused specifically on Hindu religious pilgrims and sites due to the abundance of such locations within this religion, where individuals often undertake long journeys on foot to reach these sacred places. As I myself follow the Hindu faith and have firsthand knowledge of this practice, I chose to explore this particular religion.

It is important to note that our research does not imply that all elderly individuals are religious or have a spiritual inclination. However, considering the substantial number of people who adhere to the Hindu faith, we aimed to cater to this large demographic. We believe that a similar approach can be applied to studying religious practices and pilgrimages in other religions, acknowledging their unique characteristics and the significance they hold for their respective followers.

Primary Research

I did primary research in form of informal discussions with the user group who have been on Hindu pilgrimages, and to significant religious places.

Goal: To understand their perception of religion and in what way the religious yatras (pilgrimages) are significant for them.

Findings:

- Mostly people travel with a group of people to these places and have to walk a lot.
- According to them the ambiance and power of god give them strength to walk a long distance on a pilgrimage.
- Many famous temples have several mythologically significant sites surrounding them, which are interesting to hear.

Design Requirements:

- Socialization
- Less dependency on family
- Simple to use

Persona

We moved forward to create persona. We first listed out all the related stakeholders in our scope, which are as follows:

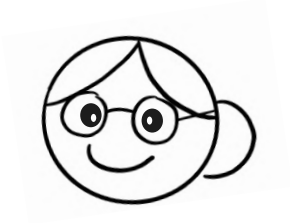
- Elderly
- Senior Citizen friends
- Spouse
- Grandkid
- Son, Daughter and their spouses
- Relatives
- Doctor
- Neighbours
- Nearby shopkeepers

Out of these our **focussed stakeholders** were:

- Elderly
- Senior Citizen friends
- Spouse

PERSONA CREATION

1. **Elderly in a group of friends**



Sudesha

Female, 65 years

Friends Group of 4 members,

Age range 65-75 years old.

She has neighbours friends living in the same housing society. They meet every day at the her house in the evening and chit-chat. All of them are interested in religion and keep on attending pooja's along with other events at temples and also organize at their places. They want to have a better fitness level. However, they find it boring to walk compared to when everyone is sitting and talking. They also don't know how much to walk.

Likes: Participating in religious events and watching and listening to related content on TV and Smartphones.

Goal: To improve fitness level of her and friends so that they are able to actively socialize.

Pain points:

1. Sometimes they walk together in the park but that is very rare.
2. Usually, they find it unnecessary to exert themselves when they have so much fun in chit-chatting only.

Motivation:

- Group walking activity that is fun and engaging.
- Relatedness to each of their group members.
- Religious belief.

2. **Elderly Living Alone**

BigB Sharma

Male, 67 years old

He lives with his son and daughter-in-law in their home. When those two leave for work, he is all alone in his home. He likes watching TV, eating food, and sleeping during that time. Sometimes he walks in his garden but that is not very regular. He finds walking alone boring. He is fairly tech-savvy.

Quotes: 'Everyone is busy in their work, I am busy with my God.'

Likes:

1. Watching religious content on YouTube and TV
2. Feeling after returning from a walk.

Goal: To maintain and improve his fitness level.

Pain points:

1. Fears of falling
2. Boring to walk alone without any purpose.
3. Family members are busy in their own life.

Motivation:

1. Relatedness with their family and neighbour friends.
2. Not being dependent on the family.

Ideations: Religion and Elderlies

Iterations of Concepts

Based on our narrowed scope of focusing on religious interests for the elderly, we generated various concepts for the activity. The initial idea was further developed into multiple concepts, and the key ones are presented below:

Concept Iteration 1: Virtual Travel Ticket Based Activity to Visit Religious Places

The digital app suggests nearby places to reach based on the user's location. If the user completes certain target number of steps they reach that site virtually. They can experience the place by listening songs/audios related to the place, click a virtual selfie. They get tickets for next three places from which they can choose which to go next.

Fig: Scenario for virtual temple

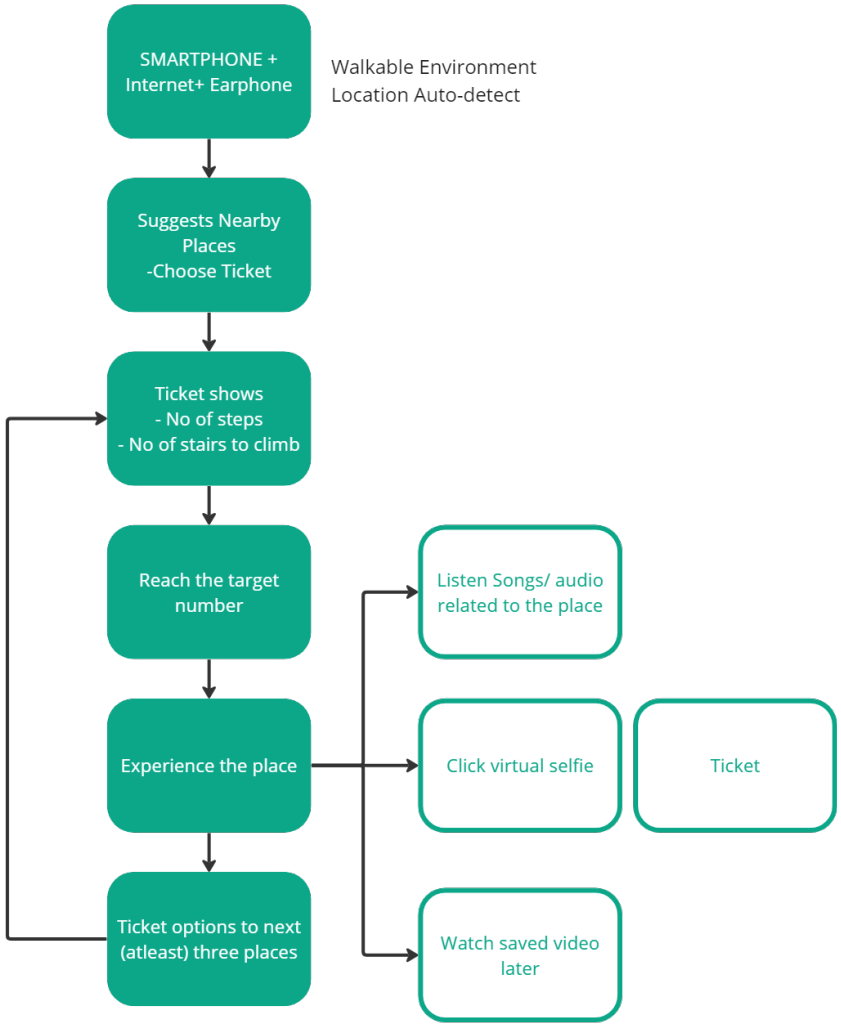


Fig: Flowchart of the activity

Loopholes

1. This activity promotes individual walking rather socialization which is a motivation for many elderly to walk.

2. This activity might contradict the mental model of the distance between places in real life and on this virtual platform. Elderlies are sensitive to such details. Any odd thing can depart them from this activity.
3. The usage of earphones is necessary in this activity so that they can hear the audio but it should be optional.
4. People don't know which place is going to come next. There could be some place tickets which does not interests them. User may drop out.
5. Initially, we considered adding religious places of all religions, but we feared that by attempting to include everyone, we might end up satisfying no one. Elderly individuals, in particular, tend to hold strong beliefs and may not be willing to visit places of other religions, leading to dropouts.

Based on these loopholes we proceeded with our next iteration.

Concept Iteration 2: Virtual Pilgrimage based activity
To make the experience of visiting religious places more accurate to that of real life, we chose the context of pilgrimages.

Virtual Pilgrimage Route: In a pilgrimage, we have to complete a long journey (mostly by walking) to reach the major temple. Most of these journeys have multiple spots in between which are usually mythologically significant too. Experiences shared by elderlies of visiting such places also included the importance of visiting these small significant spots also. Most of them have an interesting mythological story that amazes them when they get to know them.

Example: On the pilgrimage of Vaishno Devi, situated in Katra, Jammu & Kashmir, pilgrims have to walk a long distance. It starts from Trikuta Bhawan and in between there are multiple spots of religious interests: Banganga, Ardhakuwari Mandir, Bhairon Mandir, and finally Vaishno Devi Shrine.

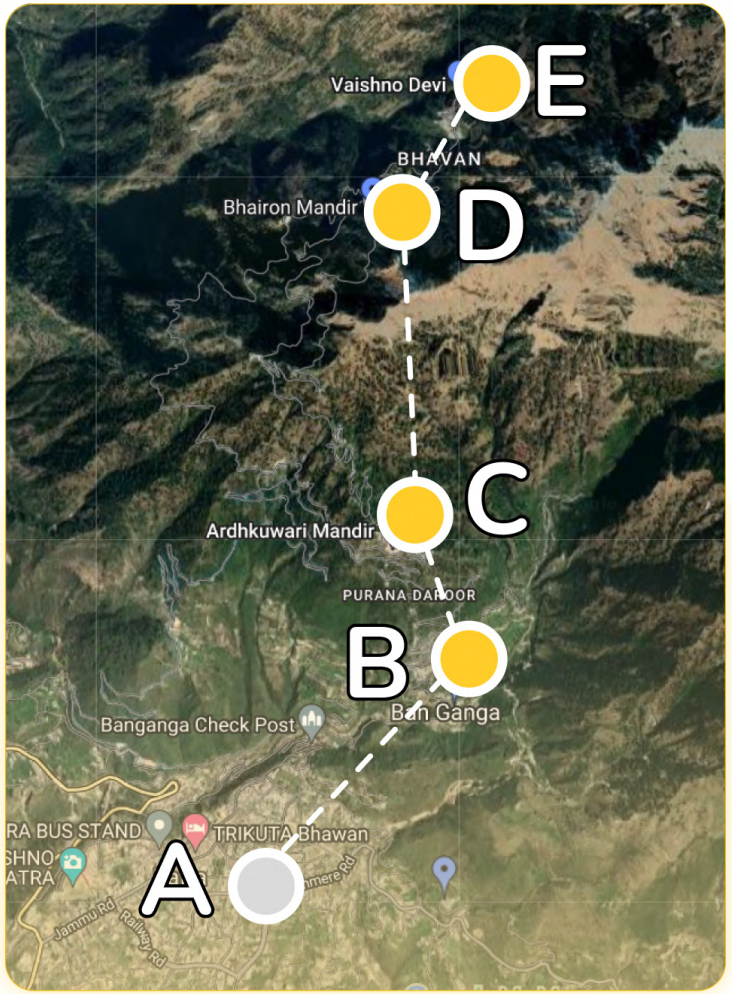
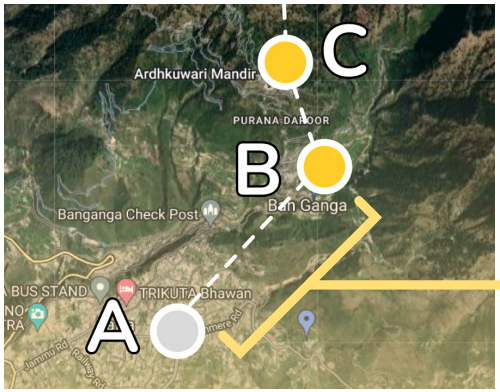


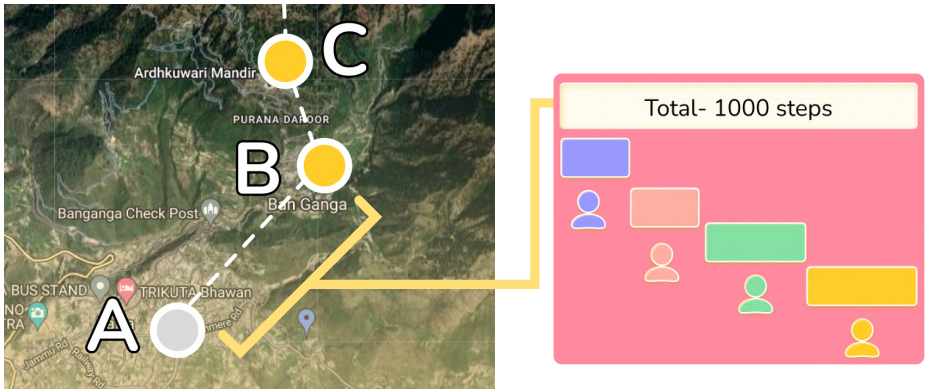
Fig: Map view of Vaishno Devi Pilgrimage

Virtual Pilgrimage Target: Based on the previous average steps of the users the target number of steps will be given for each day. If they are able to complete those number of steps, they reach the next spot on their virtual pilgrimage. Eg. from spot A of Trikuta Bhawan to Spot B of Ban Ganga on the Vaishno Devi Yatra.



Total- 200 steps (little more than average previous step count)

If the elderly want to walk in a group, they will receive a collective target based on the sum of their average previous step counts. If they successfully achieve the cumulative target together, they will all reach the next spot.



This way Each elderly individual will have an individual target based on their personal walking capability.

Virtual Pilgrimage Reward:

If user reaches the next spot on their virtual journey, they will receive a virtual video tour of the place explaining the religious significance of the place and also they can take a virtual selfie with that site in the background. This they can share with their family and friends.

Upon completing each group yatra, participants can receive a souvenir that holds special religious significance associated with the visited place. For instance, during a yatra to Chitrakoot, Madhya Pradesh, wooden key rings can be provided as souvenirs, considering the region's renowned craftsmanship in wood artifacts.

Initially, group members can opt for a subscription to purchase these reward items, with payment made at the beginning of the yatra. Subsequently, the government can consider subsidizing or fully funding these items. This approach can serve as an effective mechanism for preventive maintenance among the elderly.

To enhance the experience further, partnerships with organizations like 'Art of Living' can be established. These organizations can provide exclusive video content for each yatra and leverage their resources to establish connections with pilgrimage sites and temples, facilitating the distribution of mementos.

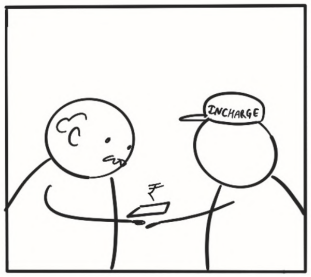
interests, giving them a feeling of productivity. Furthermore, the likelihood of dropouts is reduced as participants do not have to choose different places each day, providing a consistent and engaging experience throughout their virtual pilgrimage.

Elderlies whose target will be lower will be inspired to walk more while matching steps with other group members. If not, they can sit and relax.

Choosing a medium of the activity

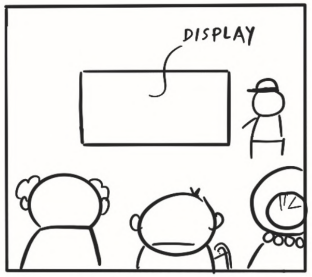
A. Large screen installations: This activity can be played in groups and to afford many people together I thought of having a large screen installation. This can be placed in the common space of a closed housing society or in parks. An attendant is present their to manage the screen. Here they can come and sit together, watch reward video and socialize also. In the group activity, their target step will be added together and will be a group aim to achieve each day. This is to promote collaboration.

The following scenario explains this properly:

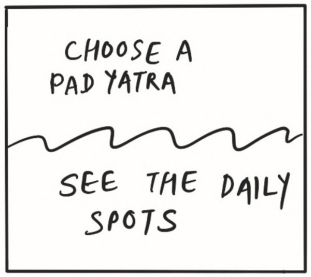


Elderly has to submit some amount for each virtual pilgrimage and to take part in the activity.

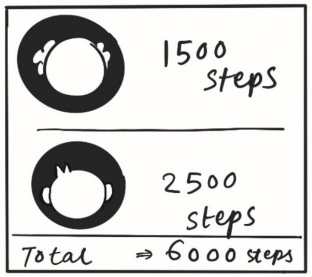
Elderly should have a smartphone on which he installs a specific fitness application and sync it with the installation system.



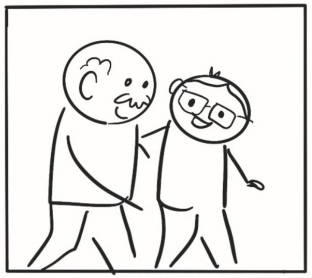
After all of his friends have done the previous step they sit Infront of a large display screen installation. The attendant starts the activity and he interacts with the screen.



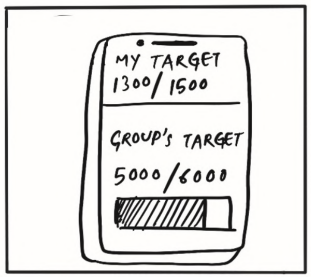
Attendee informs them about the activity and asks them to choose a Pilgrimage/ Padyatra (hiking) and see how much time it will take based on no. of spots in between.



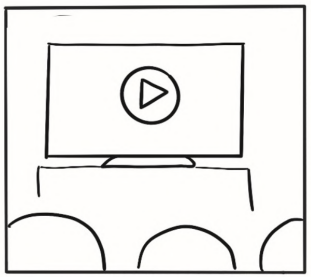
Each of the elderly gets a target step on the screen based on the previous data stored on the fitness app. If this is for first time, we can ask them to walk continuously for the first time.



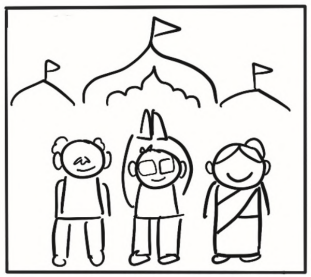
They all start walking together to complete their individual target.



Their step target are shown on their app screen. To make it collaborative the overall target is also shown which they have to achieve as group.



After achieving the group target, they virtually reach the spot 1 of the pilgrimage. They can see a video related to it and know more about the place.



They can also take a virtual selfie with that spot in their background.

At the end they get a souvenir/ memento specific to that place, for which the money they had paid initially.

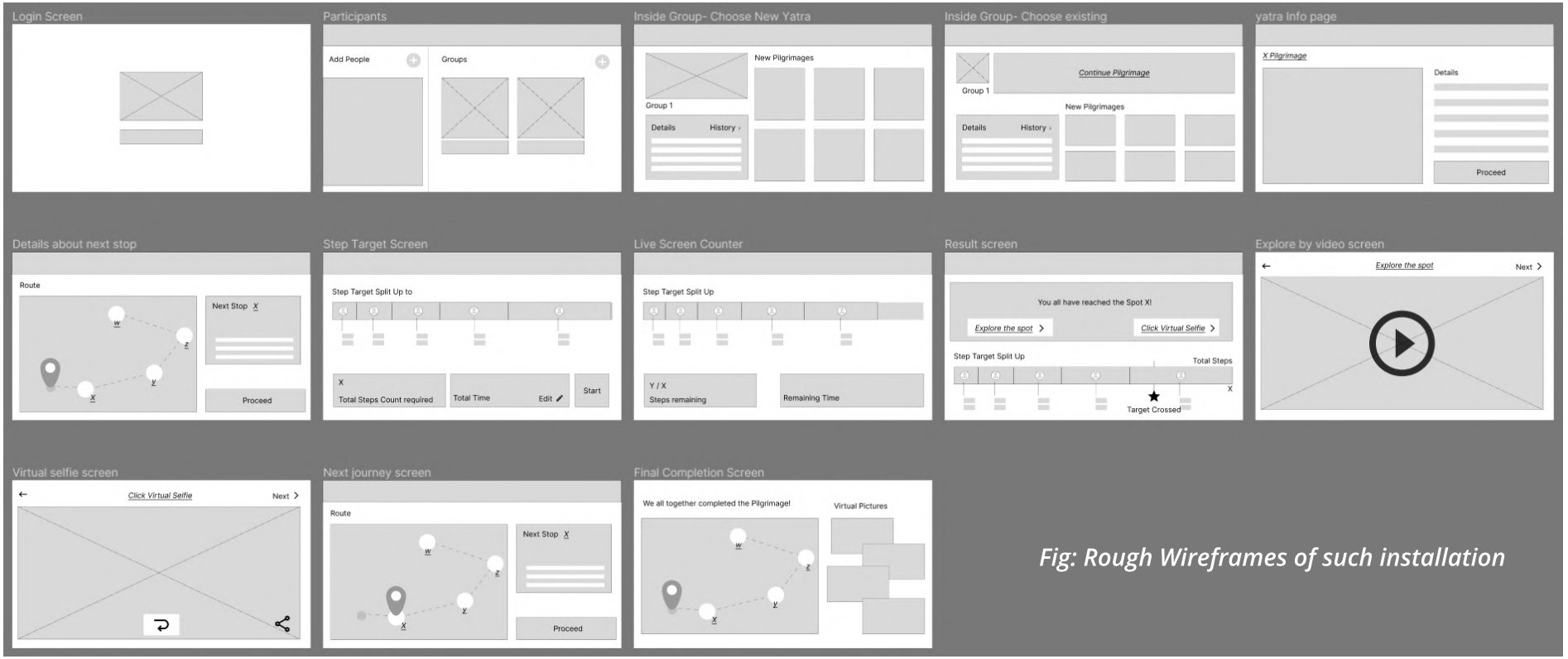


Fig: Rough Wireframes of such installation

Positive points of this medium:

1. Increases socialization among people. They will walk together to achieve the collaborative goal will give them motivation and not feel bored.
2. Multiple people can watch the reward video together after completing the journey at the same time.

Limitations of this medium:

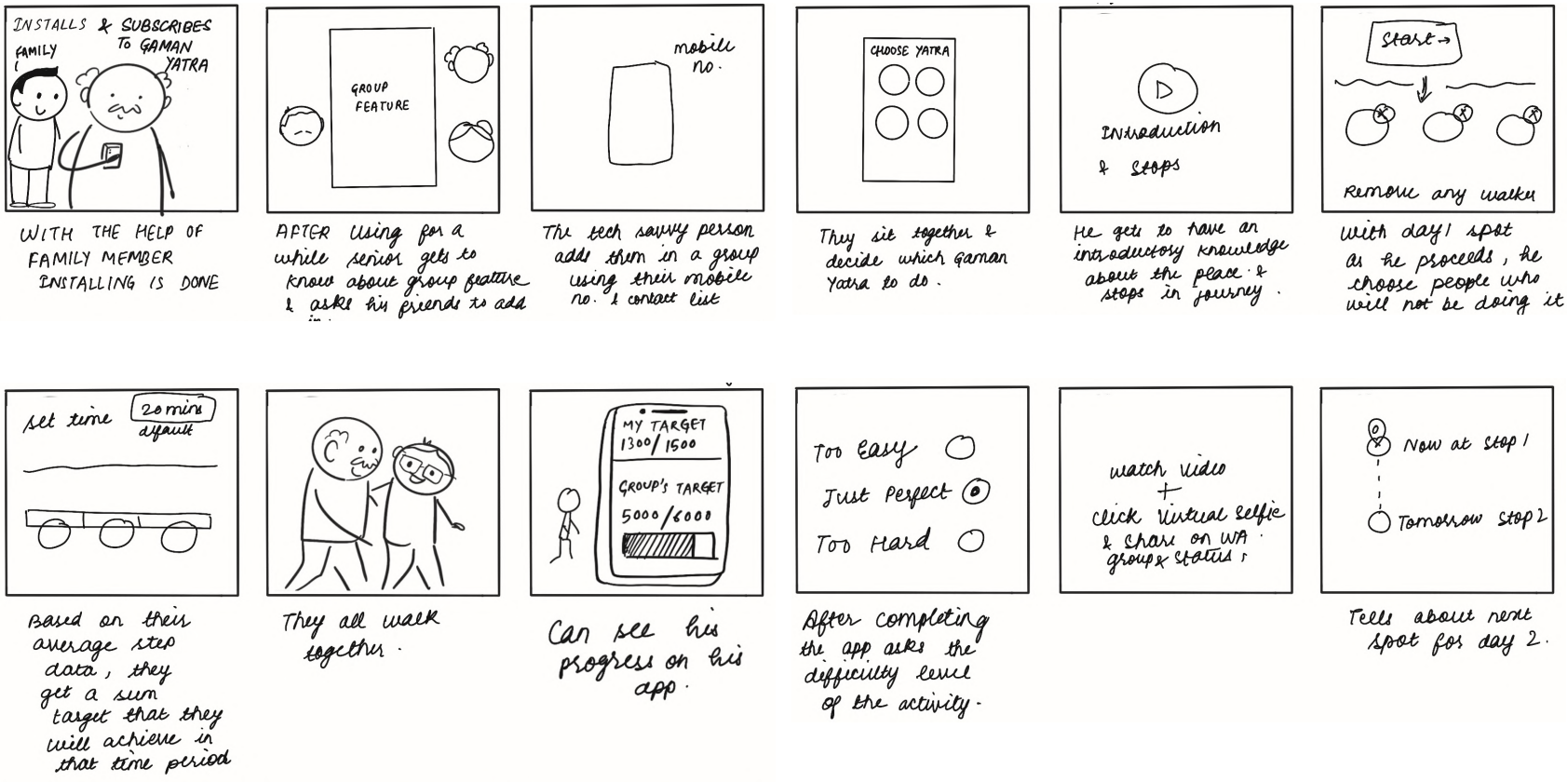
1. High initial capital cost to setup these big installations in common areas of the buildings.
2. Privacy issues also when the live tracker is shown on the screen open for the public.
3. Installation can remain busy for some time when multiple groups come at the same time to the installation.
4. Individual walking mode can be incorporated but may not work if it gets crowded.

A. Smartphone:

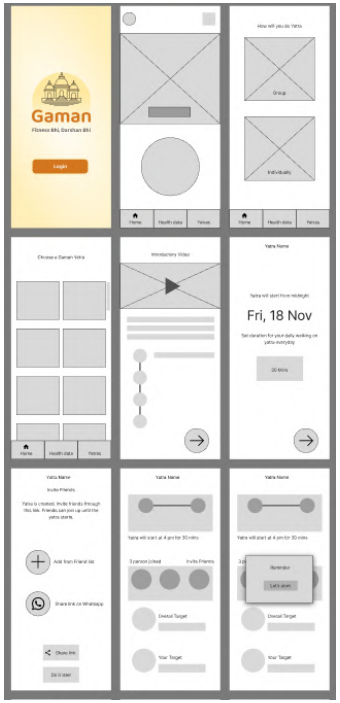
Having issues with digital installation screens, we look again towards smartphones. Anyways the installation activity would have required a smartphone and a fitness application installed in it for tracking the steps. It will have individual and collaborative walking feature. For collaborative walking, people should form a group. It would reduce a lot of the costs. Important features that should be present in the app:

1. Walk anytime during the day to complete the steps target.
2. See who has joined the yatra.
3. Set the duration of activity in case of group yatra. Not needed in case of the individual yatra.
4. In group yatra there should be a start button on their app screens when they are ready to walk.

The scenario explains the group walking feature:



The scenario explains the individual walking feature:



We created wireframe based on iur scenario.

Fig: Rough Wireframes of such installation

Positive points of this medium:

1. Low cost. Readily accessible.
2. You have a flexibility to choose your group members. They can be remotely located also.
3. Private fitness data remains private.

Limitations of this medium:

1. Tech savviness required for every person of the group to operate the phone.
2. Small screen to read and tap.
3. When watching the video together they have to see in their respective mobile screens.
4. Good for individual walking only. Onboarding group will be difficult for elderly.

C. Tablet & Smartphone: (Chosen Medium)

While we saw it would be really tricky for the elderly to engage in the group activity on smartphones, the difficulty of initially linking other users to the common activity and watching reward videos together made us look for a different medium. Many of the elderly, when asked, were not sure about how they would operate the smartphone alone. Hence, we proceeded with a tablet & smartphone-based application. Here, the tablet can be used for the group to view the activity together, while the smartphone helps individuals with step counting, which they can carry to track the status of the activity.

The **advantages** include:

1. Accessibility: Only one tablet is required for a group.
2. Privacy: Fitness data remains private.
3. Flexibility: The group can walk anytime during the day.
4. Socialization: Enhanced socialization experience.
5. Group engagement: Multiple people can watch reward videos together.
6. Personalized targets: Individuals can see targets on their phone while walking.

Final Iteration & Our Solution

After considering all the advantages and limitations of each iteration we finalised upon the Tablet & Smartphone medium. We went into detailing it out.

Tablet for the group to view the activity together

Smartphone for individual for step count and feedback. It can be used without tablet if walking alone.

Name of the Activity

I chose the name 'गमन' (Gaman) which in Hindi means 'to go', 'to travel', or 'locomotion'. I found this word to perfectly go with my project goal and the intended design outcome. This is simple to pronounce also.

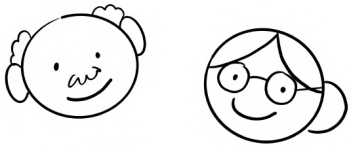
The tagline that I chose with this is 'Fitness Bhi, Darshan Bhi'. Here 'darshan' is a Hindi term that means 'to visit.'

Scenarios

We created scenario to go into the detailing of the concept.

1. *Onboarding:* Assistance is provided by Gaman attendant for the elderly

1.



This is Suresh and Meena. They has been retired for some years now.
There son Raj live in another city.

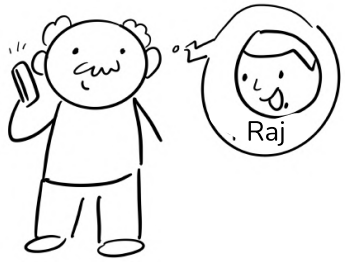
2.

Raj has been very worried about their sedentary behaviour. He comes to know about a Gaman app through colleague. He installs and logs in on app on his phone and gets a call from the Call centre.

3.

Raj is informed about the working of the app. He likes the activity. He also gets to know about free demo session at home and then avail voice customer support.

4.

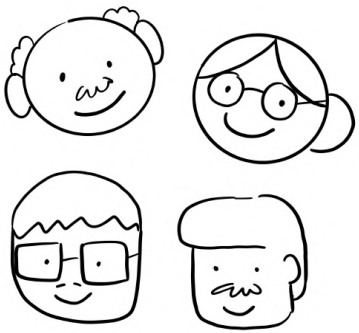


He informs his parents about it. They also like it. He also says that this is a group activity so he can get neighbour uncles also.

5.

The next day Gaman attendant comes to their place.

6.



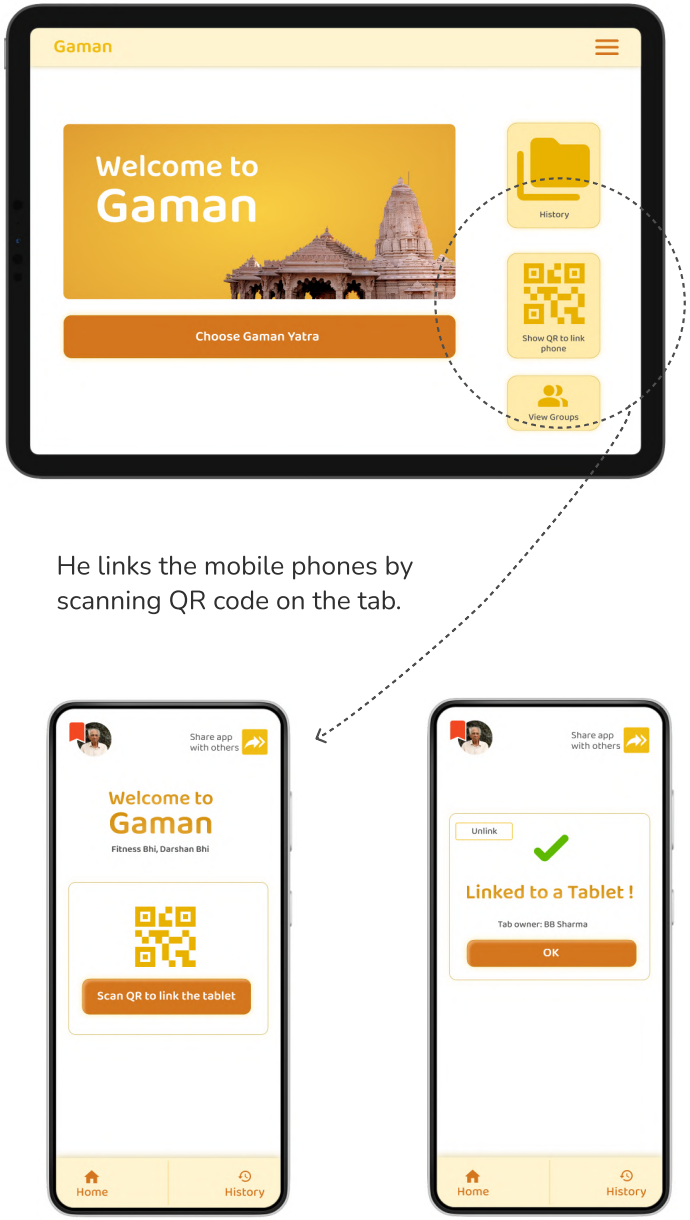
Neighbor uncles also come. They all sit down in the living room.

7.

Gaman attendant tell them about the context. He also asks for one tablet and individuals smartphones and installs the Gaman apps.

Log in with their mobile numbers.

8.

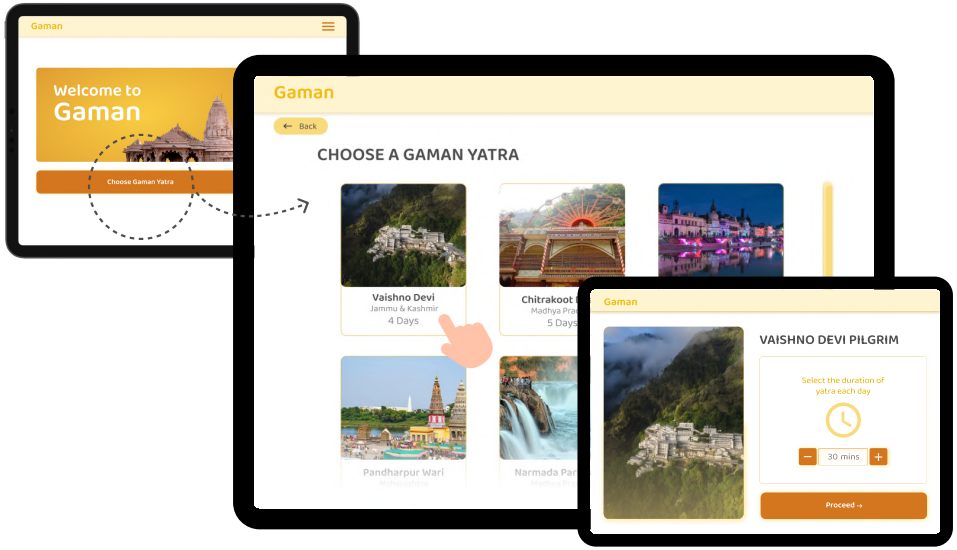


He links the mobile phones by scanning QR code on the tab.

9

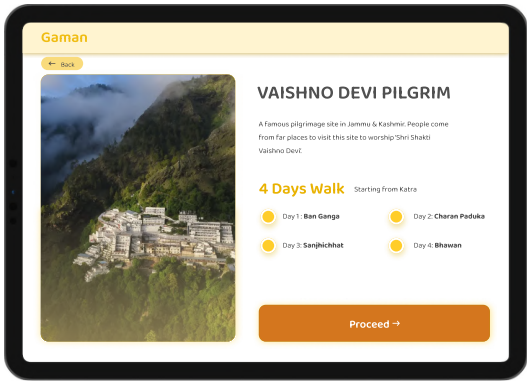
After linking every elderly's phones, it forms a group in the tab.

10. He chose one yatra after discussing with all of them,



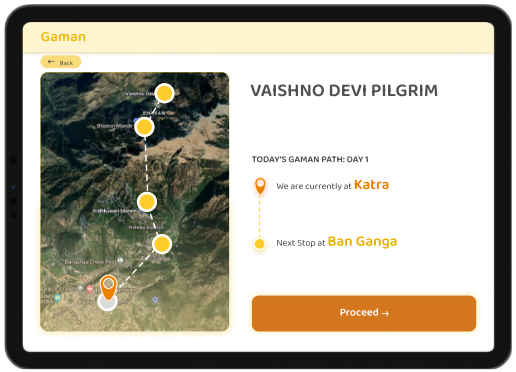
He can set a one time timer to set the duration of the activity.

11.



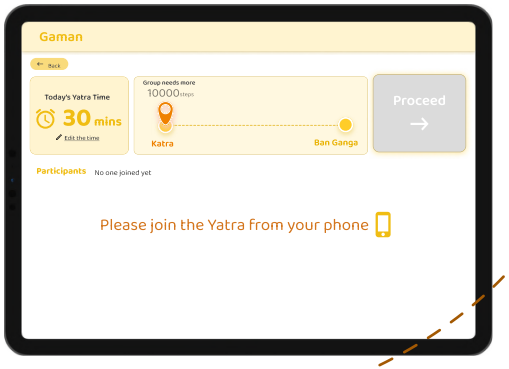
After choosing one of the yatra, details of the place is shown. It shows actual stoppage at each day too.

12.

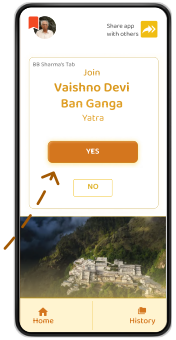


Attendant explains all the steps: Today's virtual journey is shown.

13.

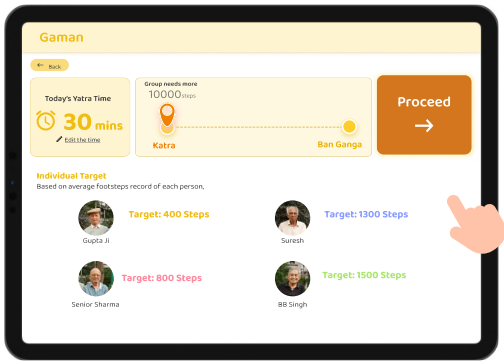


After proceeding it asks to join the yatra from Gaman smartphone app.

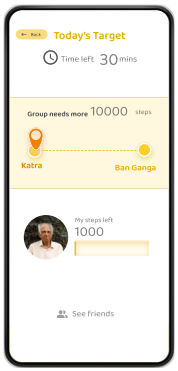


Open Gaman smartphone app and Tap 'yes'

14.

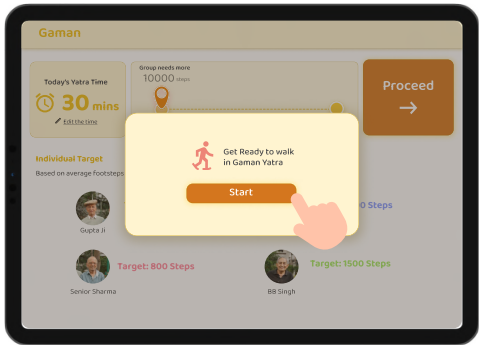


When everyone accepts to join the yatra, their individual steps shows up. They are also shown group target steps (which is summation of individual steps) to reach the next spot.



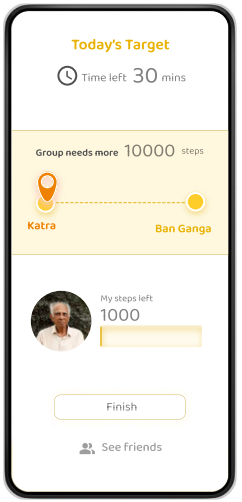
Everyone gets to see the same target steps details on their smartphone

15.



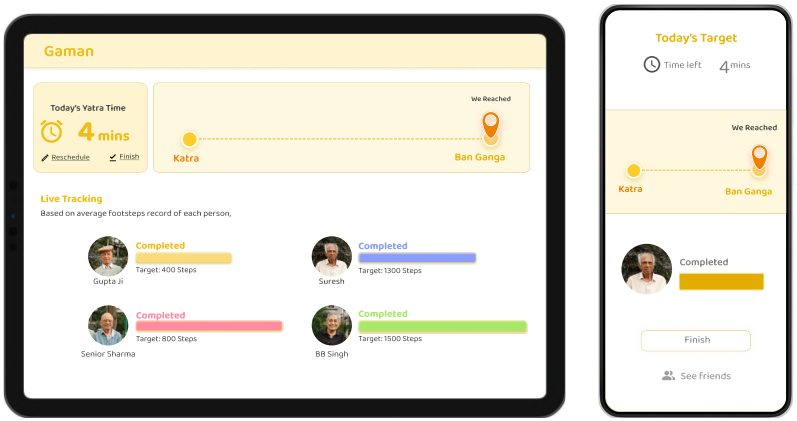
Tap on start when everyone is ready for walking

16.



Live step tracking via smartphone

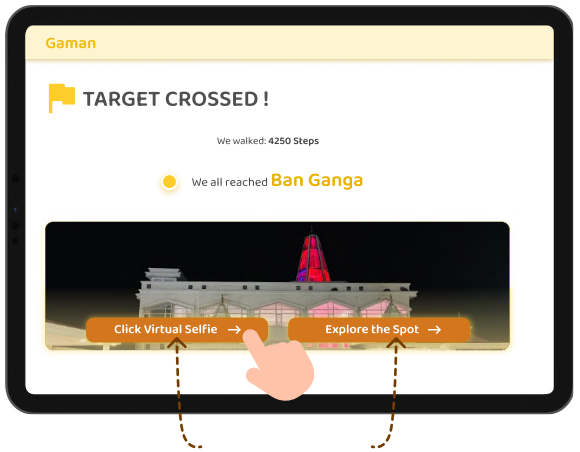
17.



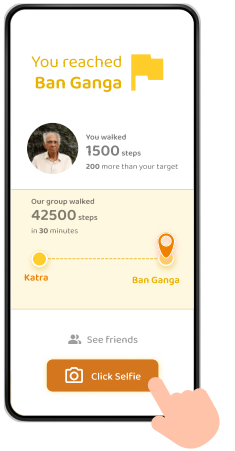
Progress bar on the devices

18.

After completing group target they reach the day's spot.

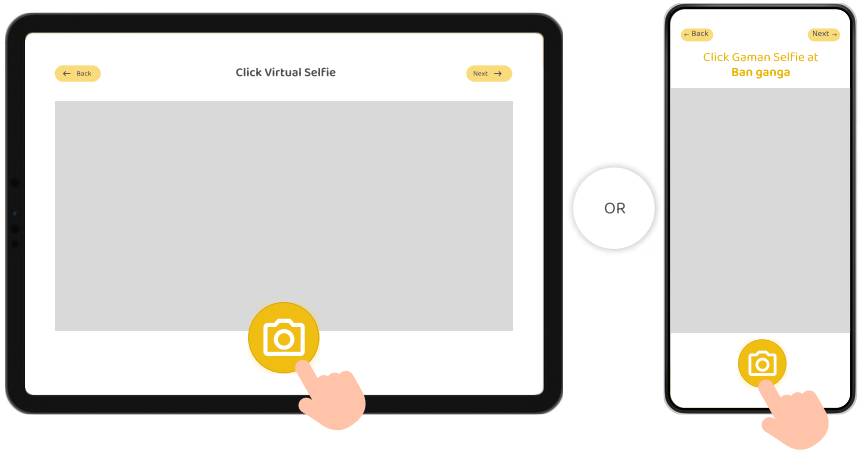


They get two rewards



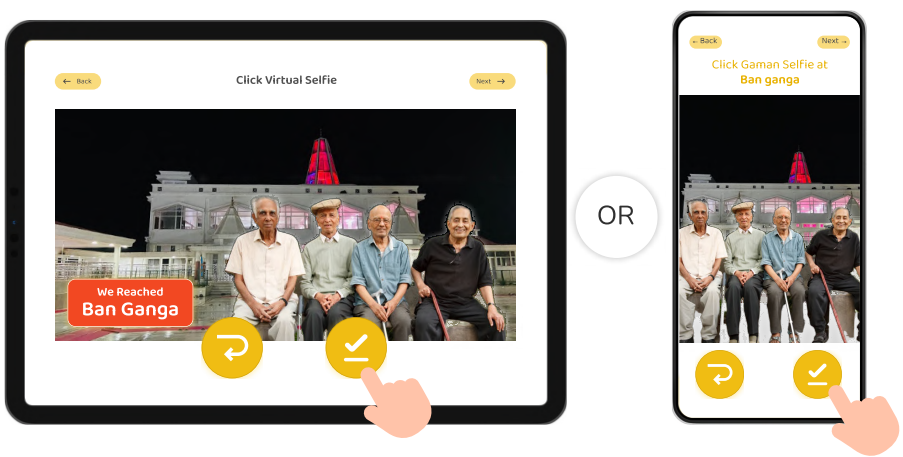
Either click the group selfie on phone or on tab.

19.



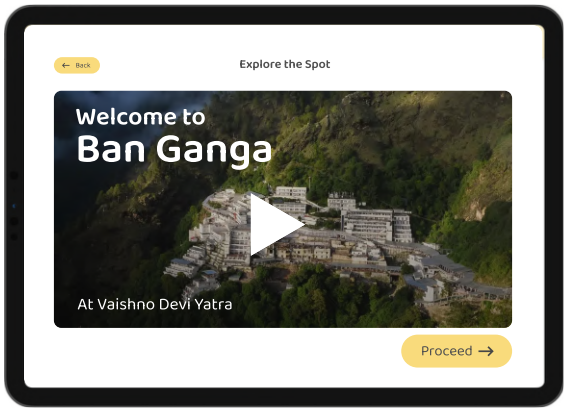
Either click the group selfie on phone or on tab.

20.

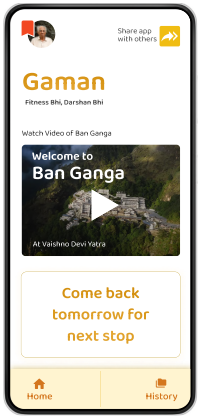


Proceed or retake your selfie

21. Watch Video and explore the significance of the en-route spot.

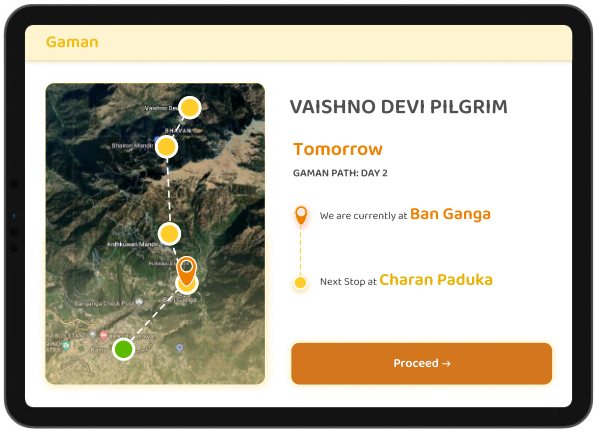


OR

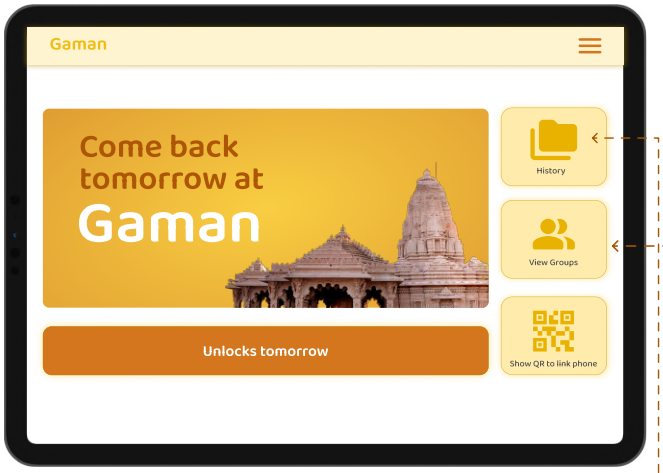


Watch Video later which is placed on your app's home page untill next spot video is achieved.

22. Shows overview of the next day's journey

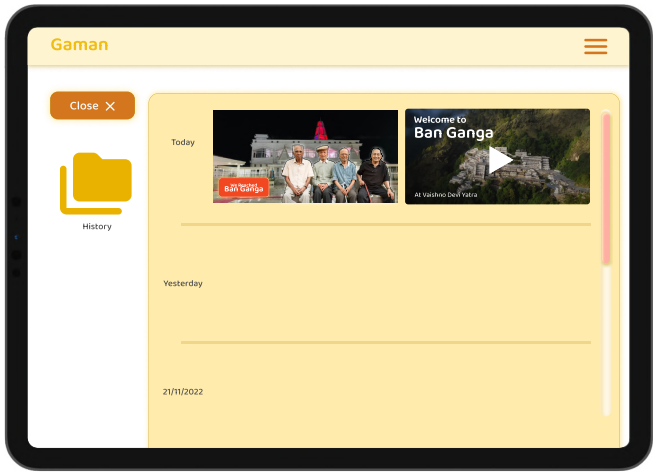


23. Day's Activity Ends



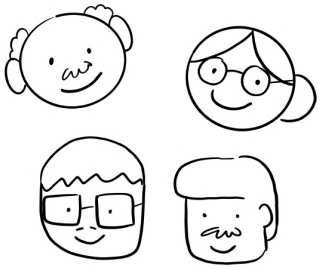
View group option to see past groups who you have walked with.

24.



There is a History section where past earned rewards: videos and pictures, are stored

2. Scenario of Onboarding & Subscription Plan:



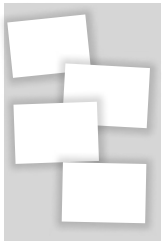
All of them loved it to know about the app.

Attendant informs them they can use it for 1 month free and later they have to subscribe.

Each tablet app has a subscription plan according to the number of participants it has

3. Momento-After subscription

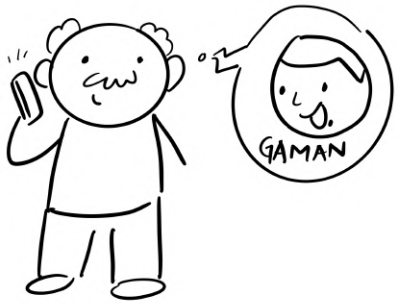
- Day 1 : **Ban Ganga**
- Day 3: **Sanjhichhat**
- Day 2: **Charan Paduka**
- Day 4: **Bhawan**



Once the yatra is complete. The group members get a collage picture of their virtual selfie and reward *souvenir* or *prasad* at their doorstep.

Virtual Selfie collage

4. Virtual Assistance



If there is any help required, elderly can call Gaman call center. They can virtually access your apps and solve the issues.

What if's?

- **Group walking**

1. **What if a person did not join the yatra group at the time of the start of the yatra?** They can call each other to know why is a person missing before starting. After starting the yatra which is an almost weeklong activity, people can still join in between. But they will not be able to go back and see previous spots, once the group has crossed some spots of the yatra. They will receive souvenir as usual as the reward at the end.
2. What if a person couldn't complete his target number of steps for some reason? Others have to complete their number of steps to get the reward.

- **Individual walking**

1. **What if on a particular day elderly couldn't complete his target step or is absent in the designated time?** - They will not be able to reach their target that day and yatra can be resumed the next day.

Designing Interface for elderly

Secondary research: 'Special UI needs for the elderly'

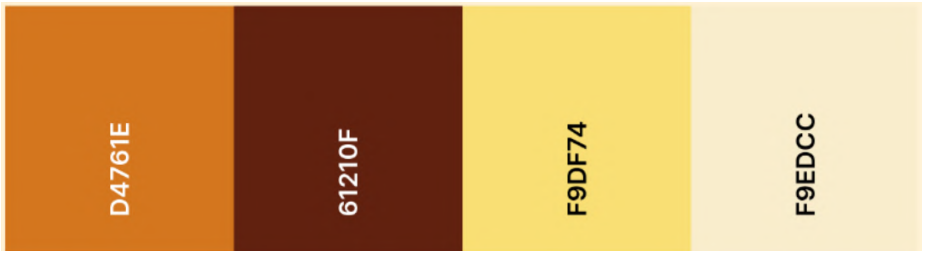
Reading research papers [13] about designing UIs for older adults highlighted the importance of specific design elements. Key considerations included ensuring clear contrast among elements, using larger and sans serif typefaces for easy legibility, and placing essential information at the centre of the screen. To enhance usability, tasks should be straightforward and avoid complex menu hierarchies, as well as moving and expandable menus.

By incorporating these insights into the design process, I was able to create a user interface that caters to the unique needs and preferences of older adults, promoting ease of use and accessibility.

DESIGN SYSTEM:

Colour Palette

I chose yellow as the major theme with orange and brown as the side colors. I chose navy blue as an accent color. This creates an analogous scheme. These colors were chosen considering the theme of spirituality and enlightening energy.



Font

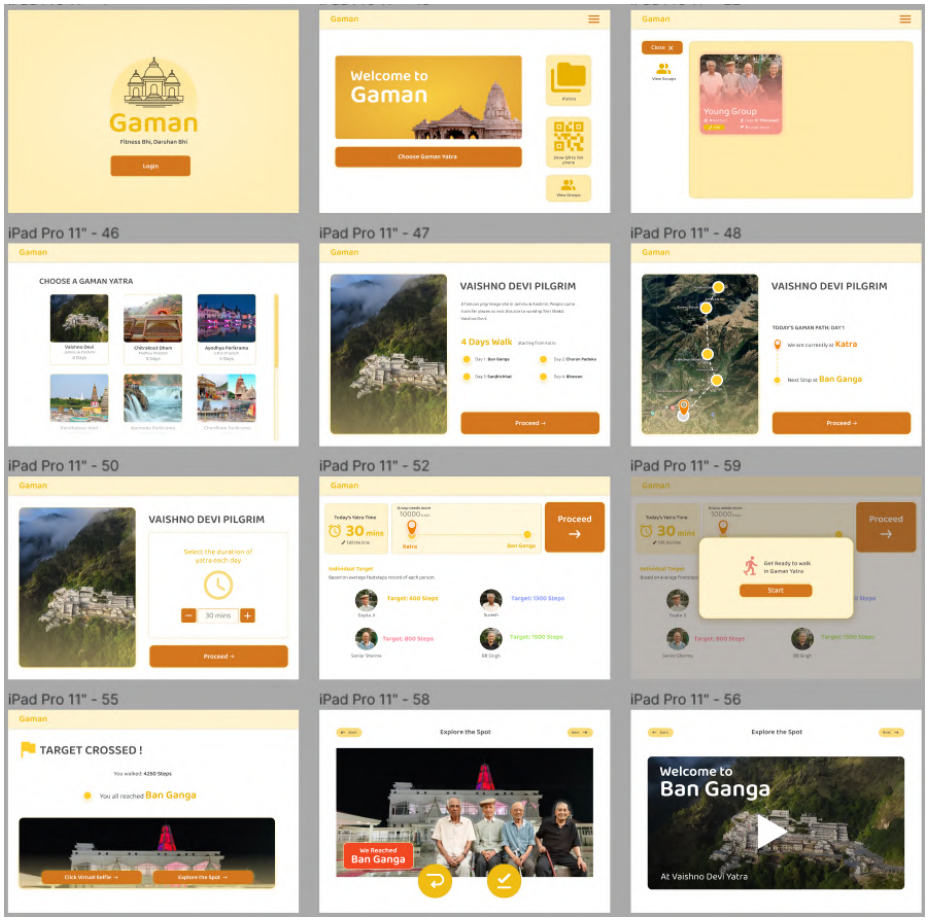
I chose Baloo 2 font, designed by Ek Type [14]. This is an open-source variable font that supports nine Indian scripts plus Arabic along with a Latin counterpart. I chose this to support the later addition of local Indian languages in the UI.

Gaman

Fitness Bhi, Darshan Bhi

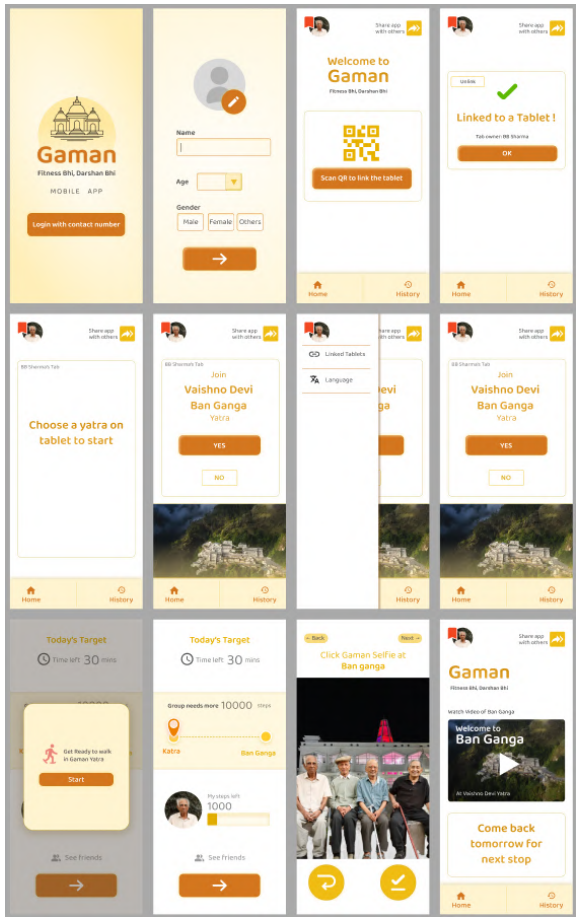
Final User Interface of Tablet & Smartphone

The screens were meant for the tablet and smartphone screens. Following are some of the screens that were created and prototyped in Figma:



Prototype Links:

1. Tablet Prototype - **Link**
2. Phone Prototype- **Link**
3. Combined clickthrough - **Link**



Evaluation

Since, we wanted to evaluate how the application will effect socialization and we did not had a working coded prototype application, and also original video content, we decided to use **'Social Prototyping'** method of testing. A social prototype is a prototype that is deployed as close to the actual social context as possible to gain insights about the effects the product may have on socialisation.

Screener:

- Age 60+
- Smartphone user and fair tech savvy
- Can walk independently without any assistance & have no other major disability.
- Believe in the Hindu religion.

Methodology:

1. I visited one of the elderly's homes and chose one of their smart TV for tablet display. I connected my laptop to the TV using an HDMI cable. This will extend my display on the TV.
2. I also called their elderly neighbour in the house. Together there were three participants and their ages were 67, 62, and 72 years.
3. I installed a step counter on their smartphones. 'Step set go' app was used for it.
4. I made them sit down in front of the TV and asked a tech-savvy person, who was one of the elderly's family members to operate my laptop.
5. Since they had installed apps for the first time no previous step record was present. I asked them how much they usually walk and fed those individual targets in my system.
6. The family member person started operating the screen and I was assisting them.
7. The person was telling out loud the things present on the screen to the elderly.
8. I chose the 'Vaishno Devi, Jammu and Kashmir' Yatra for them.
9. When they were told about the walking activity and the duration for which they should walk, they immediately got up and started wearing their shoes. Although the timer started running. I gave them a walking target of 1000 steps, 700 steps, and 700 steps to them looking at their physical capability. They had to complete this in 10 mins.
10. They went outside their home to an open lawn space in their housing colony and started walking.
11. One of them had an issue with their steps not being tracked by the app. This was quickly fixed by restarting the app.
12. When they completed the 10 minutes duration, I checked their step counts on their phones and told them that they collaboratively achieved the target.
13. We all came back inside the house and I told them that you have reached the spot 1 - 'Ban Ganga' of the 'Vaishno Devi' yatra. They started laughing.
14. The family member proceeded with playing the video of the place by clicking on the link on the screen. The video was taken from Youtube.
15. They were very focused while watching the video. After watching the video they looked happy and appreciated the place. One of them said *"Chalo Ban Ganga ke darshan ho gaye!"* that we will go to this place sometime.

16. Later virtual selfie option came. I took their picture in an android app named ‘Fusion Cam’ on my smartphone. I had already set up this app with a picture of ‘Ban Ganga’ as the virtual background.
17. I quickly shared the photo with them after writing a text ‘At Ban Ganga’ on the picture via WhatsApp.
18. They were very happy and amazed about it.
19. I asked them about their experience to get qualitative insights.
20. I later made them fill out a google form.

One can see a lot of religious items present in their room. Such users are ideal users for our product.

Fig: The group watching the video together

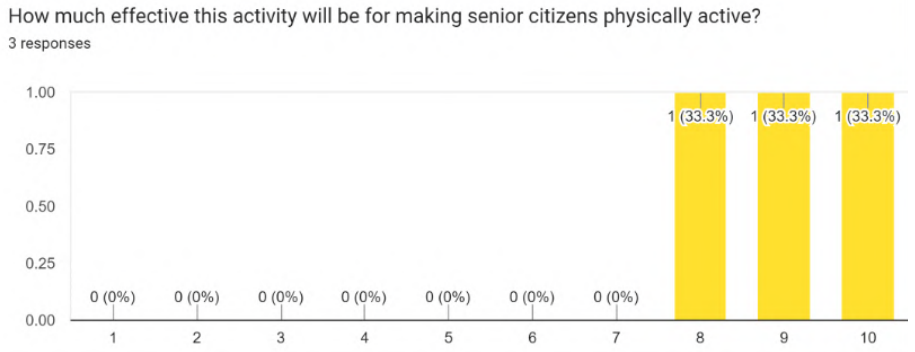
Fig: They went outside their home to an open lawn space in their housing colony for walking

Fig: Virtual Selfie shared on Whatsapp

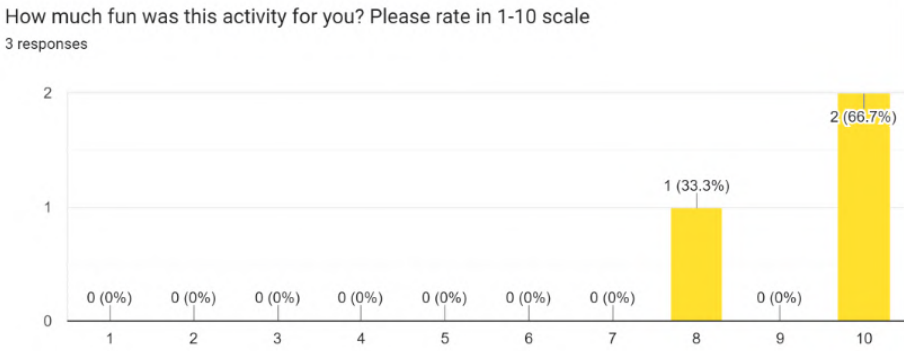
Google Form Feedback:

The response I got was fairly positive. I asked them three questions based on the fun, engagement, and effectiveness of the activity on a Likert scale of 1 to 10. Following were the details gathered from the google form:

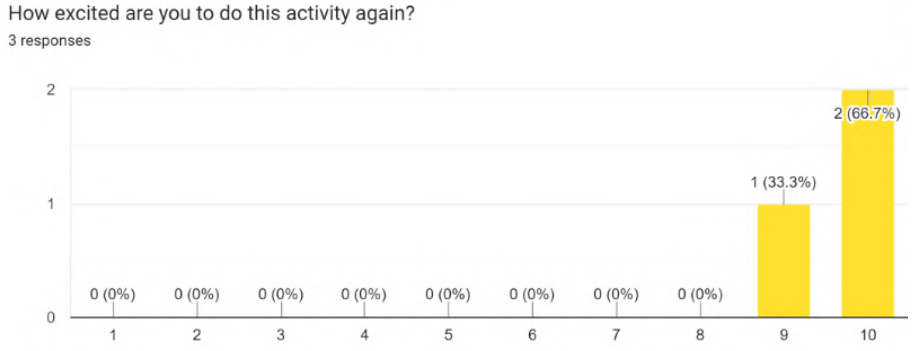
2. Effectiveness



1. Fun



3. Excitement



Qualitative Feedback:

1. The elderly liked the information that they got from the video.
2. They said there should be a get-ready screen before starting the walking part of the activity. They took some time from their walking duration to wear shoes and open-close the door of the house.

Limitations & Future Work

1. We acknowledge that the assumption of replicating this concept to other religions may not be universally relevant, as not all religions have the concept of pilgrimage. Additionally, even within the Hindu faith, individuals may choose not to visit temples throughout their lives.

2. This project focused solely on the interaction aspect of the design intervention by older adults. Due to time constraints, we were unable to compile comprehensive information about pilgrimage sites, their stories, and surrounding areas in the project.

3. We assumed that compiling high-quality videos from open sources like YouTube in a proper sequence could motivate the elderly. However, we recognize that individuals with smartphones can access reward videos at any time. To ensure exclusivity, the video content should be curated by compiling accurate information in an engaging manner.

4. It is necessary to develop a comprehensive business model around rewarding the elderly with souvenirs or mementos. This model has significant potential for a successful business system, which can involve telecasting exclusive video content, attracting more content creators for this purpose, incorporating paid advertisements, and implementing freemium models within the app to generate additional revenue.

5. The virtual selfie feature should be designed to accommodate multiple remote participants in a group, similar to the immersive mode available in applications like Zoom.

6. To assess changes in behaviour, health, and fitness levels among the elderly, a longitudinal study spanning several weeks is necessary. It is crucial to include more users from our target group to ensure a comprehensive understanding of the intervention's impact. Emotional responses could have been assessed during evaluation.

7. Usability evaluation of the screen needs to be done. It could be too complex for the elderly to understand.

8. The design has many opportunities for improving the experience while exercising. Also consuming reward may interrupt the activity of walking

Reflection

1. This project involved multiple interviews with older adults. This was the best part of the project. I got to know a lot about this age group and what difficulties they face. I also felt the warmth while talking with most of them. They felt accompanied while they were walking and also happy and proud that they were able to help me with their experiences. Many of them blessed me and wished me luck for my project in the end. This melted my heart. I can say that now I have many oldie-friends at the college campus.
2. I went into the rabbit hole multiple times while solving minute loopholes. This hampered my speed of coming up with new ideas and thinking about things from new perspectives.
3. It feels satisfactory though to have been able to complete an extensive project about making fun activities. I learned a lot about new topics like gamification, UI requirements for the elderly, and fitness technologies.

Thank You!

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14. https://ektype.in/font-family/baloo2.html

Final Jury Feedback

- **Ravi Krishnan**
  a. Emotional responses could have been assessed during evaluation
  b. Where / how walking should happen? Any guidance? Gap in the solution.
  c. Good that you are riding on existing research
  d. Coherent connection between several activities not clear (e.g. insights)
  e. References should not be just URLs - qualify them
  f. Some more work needed to complete the project

- **Ravi Poovaiah**
  a. Good efforts, process,
  b. Observations are not all insights - need to be unique, non-obvious
  c. No categorisation of users, religious theme may not be relevant to everyone, in some religions, concept of pilgrimage may not exist, a Hindu may not go to a temple all their life - could have made this specific
  d. Elderly now have used computers, smartphones -- don't presume they can't use
  e. Interface not simple enough
  f. Consuming reward may interrupt the activity of walking
  g. Time and number of steps are both important

- **Anirudha Joshi**
  a. The abstract is not an introduction - expand your design contributions, reduce everything else
  b. In the introduction, add a section on your design process and what you are contributing through this project
  c. Give references for all links such that they can also be accessed in a printed document
  d. I expected an acknowledgement of the Shree Mandir app, which was a direct point of inspiration
  e. Several assertions need to be referenced, including information about products
  f. Discuss design implications wrt your insights
  g. In the ideation, try to link each idea back to the contextual insights from you user study
  h. The scenarios in the report do not show how the design(s) fit in the life of the persona - it does not communicate the experience of before the product, encountering the product, onboarding, usage etc. The scenarios could show how the product works with different people (e.g. fit, less fit, less religious etc.)
  i. The presentation scenarios could have been more designer-like, experiential
  j. The social component is not very clear. How does the socialisation happen?
  k. The design has many opportunities for improving the experience while exercising.
  l. The evaluation is very cursory - design effectiveness
  m. Not clear if "gamification" has been achieved