

Project 2 Report

Samay Lekha

A tool for collecting Time Use Data



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Interaction Design

M.Des (2015-17)

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Declaration

I declare that this written document 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 declared 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. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.



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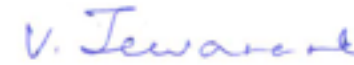
Approval Sheet

The Interaction Design Project II entitled “Samay Lekha” by Anjana Srikrishnan, Roll Number 156330010 is approved, in partial fulfilment of the Master in Design Degree in Interaction Design at the Industrial Design Centre, Indian Institute of Technology Bombay.

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1. Abstract

Time use studies rely on either participants keeping track of their activities or data collectors observing and interviewing participants. This is effort intensive relative to the quality of data thus collected.

In this project I attempt to create a Time Use Data collection tool that is context aware, effortless for the respondent and saves data in a research-convenient format. Samay Lekha is a smartphone application which attempts to enable entering data as easy as any daily routine for the respondent. The researcher gets an activity data-sheet along with the context of occurrence of the activity with the entries in the form of tags, consequently solving for both the researcher and the participant.

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2. Introduction

Time is the significant factor governing life. It has become the unit of life. An individual's time is important for him, the family, the society and the country as a whole. The country's economy is largely administered by how, where and with whom the citizens spend their time. Sometime's it is critical for a policy reform, an infrastructural change to understand the time spent. But collecting this data is quite difficult and time consuming by itself. There is a lot of pre and post work that needs to be taken care of along with the data collection. This is done using Time Use Study.

Time Use Studies is the study of data comprising of how on an average individuals allocate time for carrying out specific activities. The time spent on doing an activity and the frequency of the same is measured, analysed and further used for policy formulation on all forms of remunerated and unremunerated 'economic work', on work not considered 'economic' and other human activities.

The Government of various countries conduct Time Use Studies or Time Use Surveys on a large scale in regular intervals and analyse the data. There are dedicated research centres like The Centre for Time Use Research is a world-leading, multidisciplinary research group based in the University of Oxford's Department of Sociology who call themselves 'the lab who knows where your time goes'.

Their surveys also include Multinational Time Use Study (MTUS) and the American Heritage Time Use Studies (AHTUS) [16].

The UN gender time use studies is available in a web portal [14], developed and maintained by the United Nations Statistics Division (UNSD), provides data and detailed metadata for time-use statistics provided by countries. It shows the average time spent on paid and unpaid work in a 24-hour period, by sex for each country with available data as of May 2016. India participated in the year 1999 and between 1966 and 2015, 85 countries have conducted TUS¹ (UN statistics division)[14].

The TUS conducted by India in 1999 is the only big study that was conducted in the form of a pilot study to find the best method for Indian context. The method was of recall [5] and it was a pilot study. But to get data from such a large population is not just humongous but also very time and resource consuming.

The respondents who participate in the Time Use Study also need to devote a lot of time and effort if rich data is required. Since the study is completely based on the willingness of a participant to contribute to this data collection, there is a dire need to make it effortless for the respondent as well as the researcher for conducting a study of this magnitude in a developing country like India.

¹ TUS – Time Use Studies

2.1 Time Use Studies - Background

From the activity based data collected over a period a Time Use Studies can be made. A time-use survey is a statistical survey which aims to report data on how, on average, people spend their time. The data collected using time-use approach provide comprehensive description of lifestyle of individuals, in terms of how they spend their time in different human activities. (Ironmonger, 1999)[3].

The initial efforts of conducting time use survey in India, go back to early 1970s. A study based on a small scale survey was carried out by Mrs. Devaki Jain during September 1976 - December 1977 in six villages – three in Bharatpur district of Rajasthan and three in Birbhum district of West Bengal. In 1983, the National Council of Applied Economic Research (NCAER) conducted a time allocation study on a subsample of Employment and Unemployment Survey 3 conducted in the 38th Round (1983) of the National Sample Survey Organisation (NSSO). A pilot survey on time-use was also conducted by the Directorate of Economics & Statistics, Government of Tamil Nadu during 1996 (CSO, 2012)[2].

Nearly 22 countries have been constantly collecting data using different techniques and analysing them as recently as 2015. India has proposed to do a TUS around 2013 and then again in 2015[4] but there is no data (Rukmini, 2015)[1]. There is a huge gap since data was collected last. There is humongous effort required at data collection level and post collection processing level.

The policies and comparative study made in various vast fields, made by countries which record TUS is the primary motivator in collecting activity based data. Also in India the unavailability of data since 2000 and the inaccuracy of the data [5] collected back then (contextual inquiry) calls for an efficient data collection and processing system in India.

Though time use surveys are useful to both developed and developing economies in improving their statistics on labour use and national income; there is a difference between the objectives of time use studies in developed and developing economies. In developed countries where official statistics provide fairly reliable information on market oriented activities, time use studies are used mainly as a source of information on activities not covered by official statistics, such as leisure, household work, family care etc. Time use statistics here are used mainly for measuring unpaid activities performed at home, to analyse the relationships between market and domestic labour, and to serve as a basis for quantifying domestic work in monetary terms comparable to production included in national accounts (Hirway, Time use Studies: Conceptual and Methodological issues with reference to the Indian Time Use Survey", 1999)[5].

3. Secondary Research

TUS has been conducted since the 19th century in varied using different methods for a variety of purposes. Many methods have been proven best for certain contexts. In order to attempt to solve the problem, it is essential to glance through research done across the globe. Through secondary research, I understand what TUS essentially is first and then I analyse the methods used for conducting TUS. By looking into various new articles and papers, I attempt to explain the importance of TUS. Further, the research states which is the best method by far for TUS and adds a few existing variants of the method. There is a mention of current technological interventions and why smartphone is a probable medium for the solution.

3.1 Time Use Studies

Time use statistics are quantitative summaries of how individuals allocate their time over a specified time period – typically during 24 hours of a day or during the seven days of a week on different activities and how much time they spend on each of these activities - Indira Hirway (Hirway, Equal Sharing of Responsibilities between Women and Men: Some Issues With Reference to Labour and Employment, 2008)[6].

Time-use studies typically have a single focus: to study the frequency and duration of human activities. For example, time-use surveys may ask respondents to report everything they did during a 24-hour period along with some indication of the starting and stopping times of those actions. Sometimes there a specialised studies where the test is conducted for a particular purpose, so the questions to be answered or the data to be recorded is also predetermined like in this Unites States Department Of Agriculture Bureau Of Home Economics conducted in Washington DC (Hussmanns, 1999)[7].

3.2 The Need

There is a wide range of potential uses of data on how people spend their time, including understanding the effects of public policies on individual behaviour. For example, low-income workers are sometimes eligible to receive subsidised child care. Time-use data can help in understanding how these policies affect the amount of time that parents spend working at home or outside the home and how much time they spend with their children or elders.

Aside from public policy uses, time-use data can improve our understanding of individual and household behaviour, especially with respect to time allocation decisions and in improving our knowledge of the well-being of the nation (Michele Ver Ploeg, 2000)[[8](#)].

Data on time allocation can be used to further understanding of individuals' decisions to work or not work for pay and, more generally, decisions on how to allocate time to different activities (Michele Ver Ploeg, 2000)[[8](#)]. These data are also important for understanding the allocation of time and goods among members of households.

3.3 Examples of Time Use Study :

Secondary research throws light on a few examples of different research based on TUS

- Time Use Statistics provide detailed information on how individuals spend their time, on a daily or weekly basis on SNA activities that fall within the purview of the system of National Accounts, non-SNA activities that fall outside SNA but within the General Production Boundary and personal services that are personal, non-delegable activities (CSO, 2012)[2]. (Figure 1)
- Understand the effect of new technology on the time use of farm homemakers (CSO, 2012)[2], in 1920 by India.
- Understanding the problem of commuting and the length of commuting time, use of mass media by population, leisure time and its use by different socio-economic groups (Ministry of women and child development government of india, 2007)[9]

Activities		Rural			Urban			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
SNA	In Hours	44.83	23.90	34.74	41.81	7.02	25.45	43.63	17.60	31.24
	%age	26.68	14.23	20.68	24.89	4.18	15.15	25.97	10.48	18.60
Extended SNA	In Hours	3.25	37.55	19.73	3.09	41.57	21.18	3.19	39.08	20.27
	%age	1.93	22.35	11.74	24.74	24.74	12.61	1.90	23.26	12.07
Non-Extended SNA	In Hours	119.93	106.52	19.73	123.09	119.47	121.99	121.12	111.52	116.44
	%age	71.39	63.40	11.74	73.27	71.11	72.61	71.10	66.29	69.31

Figure 1 : Time Use Statistics, Weekly average time spent on SNA, extended and Non - SNA activities

Some Policies addressed after conducting Time Use Study:

- Study the gender discrimination in household activities (Wodon, 2006)[[10](#)].
- Work Force Using Time Use Statistics in India and Its Implications for Employment Policies (Hirway, Estimating work force statistics, 1999)[[11](#)].
- Labour Force Estimation and Employment Policies (Hussmanns, 1999)[[7](#)].
- Equal sharing of responsibilities between women and men, including care-giving in the context of HIV/AIDS (Hirway, Equal Sharing of Responsibilities between Women and Men: Some Issues With Reference to Labour and Employment, 2008) [[6](#)].

3.4 How a research involving TUS is conducted

A lot of time goes into the preparation of the study itself. The 1999 Study in India almost took an year of preparation (CSO, 2012)[[2](#)], research and followed by post research analysis. The study overall with data analysis got completed in 2000.

Most research involving TUS need a large number of participants or is done keeping households as the unit. Once the type of participants are identified then they are approached and briefed about the study. In most cases some honorarium is given for their time and support. They are free to sign out at any time and the study is purely voluntary. No personal details are breached. The demographical data, age, time and occupation with respect to time are the most desired parameters of the study (Harvey, 2004)[[12](#)]. Based on the requirement of the study data is collected over 24 hours or more and further analysed to retrieve patterns based on the parameters

The project keeps pre-collection, data collection and post-collection in mind and makes use of insights from these to get key design ideas which are discussed later.

3.5 Potential Threats

Whatever the method be, there are a couple of threats any project of a large magnitude will encounter. I try to address these potential threats that researchers generally encounter.

Four of these disadvantages are outlined below, along with the way in which the researchers overcame the potential disadvantages (CTUR)²[16] :

1. “Representativeness – to what extent does such a demanding research tool put potential participants off, creating a sample more biased than would otherwise have been the case?” As the participants for this project were purposively selected (i.e. were not a random sample) this was not an issue as we recognised that the participants represented those who were sufficiently interested and self-aware to want to participate in this kind of study.

2. “Difficulties – are some participants unable to complete the diary due to visual impairment, problems of manual dexterity or limited literacy skills?” This was able to be assessed during the first interview, and accommodations made for any difficulties that were presented.

3. “Quality of data – how consistent, adequate and accurate is the diary as a record of daily events and actions?” Validity in terms of qualitative research is often a subjective measure best judged by the researchers concerned and their referees. However, best efforts were made during the research design phase to ensure integrity. Hence the adoption of Zimmerman and Wieder’s (1977) diary-interview approach in order to ensure the highest possible data validity – including the ability to confirm and explore data during the second interview.

4. “Ethical considerations – does the completion of a diary, and all that goes with it, cause undue distress, anxiety or inconvenience?” Again, this could be addressed when the diary was introduced during the first interview. At no point was it communicated that the diary completion was a compulsory.

3.6 Classification of Activity

There is a list of activities that covers most activities humans involve themselves in which comprises of both paid and unpaid labor. Most researchers use this classification which is agreed upon by a special government team. Special studies let respondents input their own activities as they write but there is a lot more time lost into analysing such data. Thus there is a broader classification that is coded and can be easily combined and analysed.

² Centre for Time Use Research

The secondary research gives the glimpse of the broader category of activities (refer appendix 1).

1. Primary Production Activities
 - a. Crop farming, kitchen gardening, etc.
 - b. Animal husbandry
 - c. Fishing, Forestry, Horticulture, Gardening
 - d. Collection of fruit, water, plants etc., storing and hunting.
 - e. Processing & Storage
 - f. Mining, quarrying, digging, cutting, etc.
2. Secondary Activities
 - a. Constructing activities
 - b. Manufacturing Activities
 - c. Trade Business and Services
 - d. Services
3. Household Maintenance, Management and Shopping for own household
4. Care for Children, the Sick, Elderly and Disabled for own household
5. Community Services and Help to other households
6. Learning
7. Social and Cultural Activities, Mass Media, Etc
8. Personal Care and Self Maintenance

3.7 Methods used for TUS

The activities are collected from respondents via different methods. Decisions concerning reporting procedures and mode of data collection may influence data quality (Stinson, 1999)[13]. India in 1999 did a recall method where each respondent was asked to recall his activities for the past 24 hours. T

The problem with this as mentioned by Indira Hirway [5], is that when the respondents choose from a list of activities they did the previous day it is more likely to not be accurate. There is a high possibility of fudging. Also lot of man hours were spent into this collection since it was a door to door recall survey method.

Survey types - data collection methods used so far (UN statistics division) [14]

- Pilot - self complete diaries
- 24 hour Questionnaire
- 48 hour full diary
- 24 hours diary
- Household surveys
- Diary (for educated respondents and face to face interview for uneducated respondents)

- Questions
- Diary sheet included in the household survey
- Recall Interview - India

The best method to collect data as proven by different researchers is the Time Diary method. The recall method is not the best but the advantage of this method is that it consumes less time to recall and write rather than spending an entire day writing diaries.

3.8 Time Diary Method

Time diary by far is the mostly widely used method for time use data collection. As the name suggests respondents are given with books with columns to fill as they carry out activities [8].

The diary started with activity logging but as time went by, it has evolved. The diary collects context along with the main activity. Besides the elapsed time in a certain domain, we may also want some characterisation of the activity, such as attributes of a spell of time or information on the timing of external events or transitions from one activity or state to another. The purpose of such measures is to construct variables which capture the level of designated time allocations and responses for the purpose of understanding behaviour in the context of a model (Kalton, Graham. 1985.)[19]

The context comprises of secondary activity which a respondent did while performing the primary activity, location of occurrence,

participants who were involved or with whom the activity was done and whom you were doing the activity for. People do not engage in just one activity at a time. They focus is on one at a time but Humans always do simultaneous activities (Sullivan, 1998)[17]. Samay Lekha tries to collect context along with the activities so there is description of the data by itself.

Condensed activity list is as follows

- Personal care activities
- Employment related activities;
- Education activities
- Domestic activities
- Child care activities
- Purchasing goods and services
- Voluntary work and care activities
- Social and community activities
- Recreation and leisure
- Travel time

The list of suggested locations [17]

- at respondent's home
- at workplace
- at someone else's home
- at other place (includes park, neighbourhood)
- Or in transit:
 - in car (driver)
 - in car (passenger)
 - walking
 - in bus or subway (includes streetcars, commuter trains
 - or other public transit)
 - on bicycle
 - other (for example, airplane, train, motorcycle).

Whom were you with categories

- Alone
- Spouse/partner
- Child(ren) of the household under 15 years
- Parent(s) or parent(s) in-law in the household

- Other member(s) of the household (including children
- ages 15 or older)
- Child(ren) of the respondent less than 15 years old
- outside the household
- Child(ren) of the respondent, 15 or older outside the
- household
- Parent(s) or parent(s) in-law outside the household
- Other family member(s) outside the household
- Friend(s)
- Other persons(s)

A verbatim description of the day's activities is collected along with an assignment of the approximate starting and stopping times for each activity, recorded either in free format or in fixed 5- to 10-minute intervals [17]. (Figure 2)

For the design Samay Lekha this was an interesting insight. Samay Lekha borrows from the idea of Time Diaries and also **recall** method to strike a balance between content and time taken to record activities.

Day 1		6 a.m. 9 a.m.			
	1 What was your main activity? (Please record all activities, even if they only lasted a few minutes)	2 Who did you do this for? (e.g. self, family, work, friend, a charity, the community)	3 What else were you doing at the same time? (e.g. childminding, watching television, listening to the radio)	4 Where were you? (e.g. at work, home, on a bus, driving a car)	5 Who was with you at home, or with you away from home? (e.g. no-one, family, friends)
6:00					
.05	Sleep	Self	Passive child care	Home	Family
.10	↓	↓	↓		
.15					
.20	Toilet				
.25	Had shower				
.30	↓	↓	↓		
.35	Got dressed				
.40	Put on a load of washing	Family	↓		
.45	Made breakfast		Talked to family		
.50	↓		↓		
.55	Ate breakfast	Self	Read newspaper		
7:00	↓	↓	↓		
.05					
.10	Hung washing on line	Family	Nothing		
.15	↓	↓	↓		
.20	Dressed children	Children	Talked to children		

Figure 2 : An example of a time diary used by the Australian Bureau of Statistics (Stinson, 1999)[17].

3.9 The use of Technology for data collection

The time diary has been in existence since quite sometime and seen many evolutions. One such is hybridisation where respondents are asked to fill the diary in a digital format based on their convenience. It comprises of a traditional paper pen diary, a mobile diary and a web diary to be used from computers (Harvey, 2004) [12]. Participants based on their expertise and availability record data in one of these modes and send them across. But the analysis is difficult in this case as post collection is again time consuming. Oxford centre gave its respondents a pendant to wear which had a guinea camera and clicked 3 pictures of the activity in front of them per minute. They also had acceleration tracker on it to see how rushed a person is actually in comparison to what he claims to be. What the study did was prove that time diary method is the best method for time use data collection. Since both the data were almost similar in most cases (Pearson, 2015) [18]

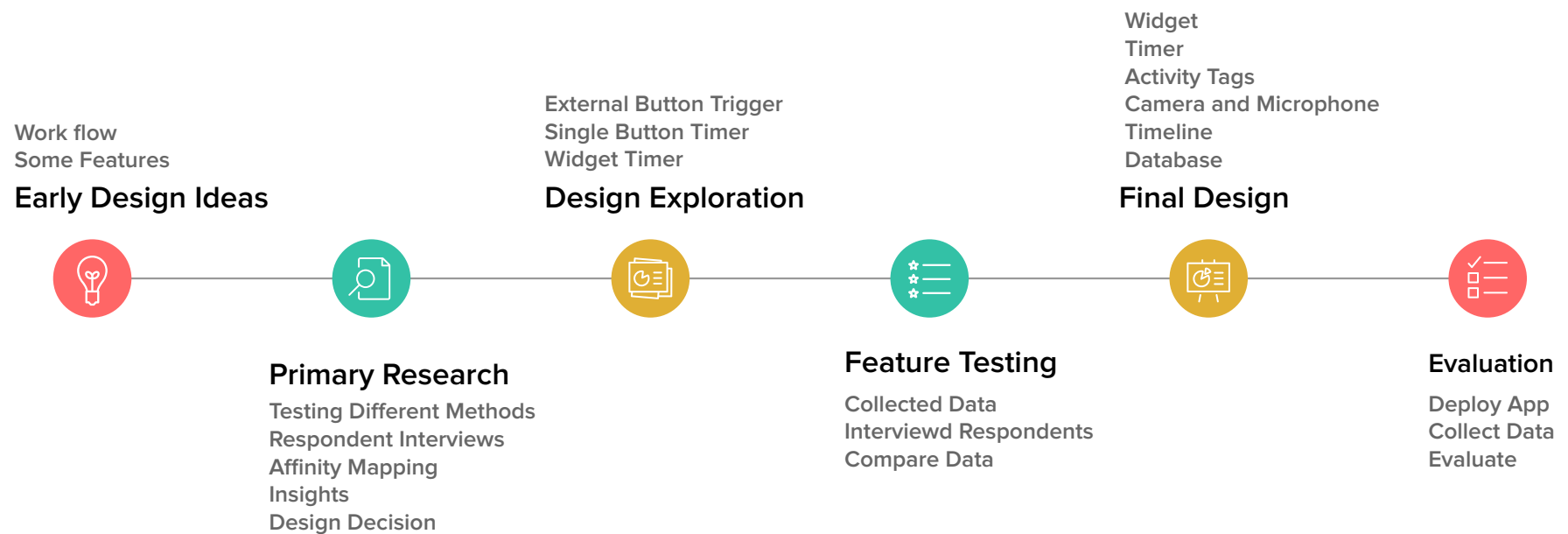
Reminder

But further interventions are of probe. Where respondents are given diaries but also reminded time to time and the participants highly benefitted from this since the cognitive load reduces through the day (Stinson, 1999) [17]. This was done by giving them a buzzer like pager or called at intervals and reminded to do data entry.

Probe

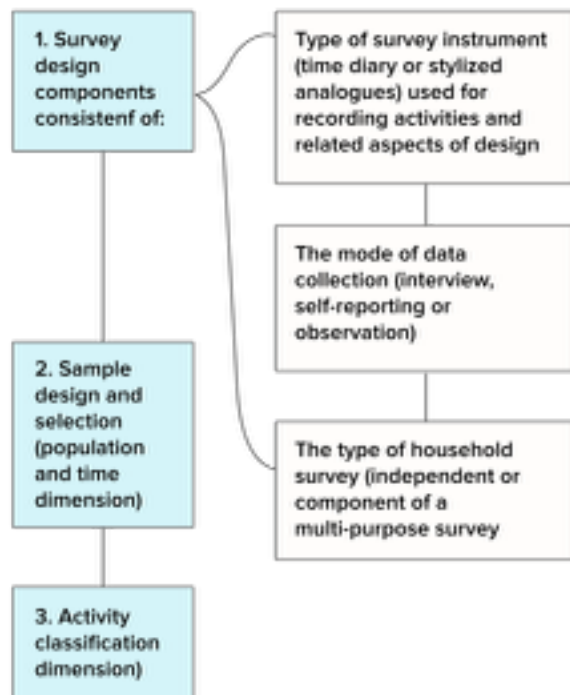
Hybridisation, automation can provide probe at the right time. Asking questions while filling probes to fill correctly (Stinson, 1999) [17]. Contextually while filling the data if right questions are asked, it sets the line of thought in the desired direction. Based on previous activity, location time, etc., different type of triggers can be sent. Technological intervention here makes the life easy for the researcher as well as the respondent.

4. Design Timeline



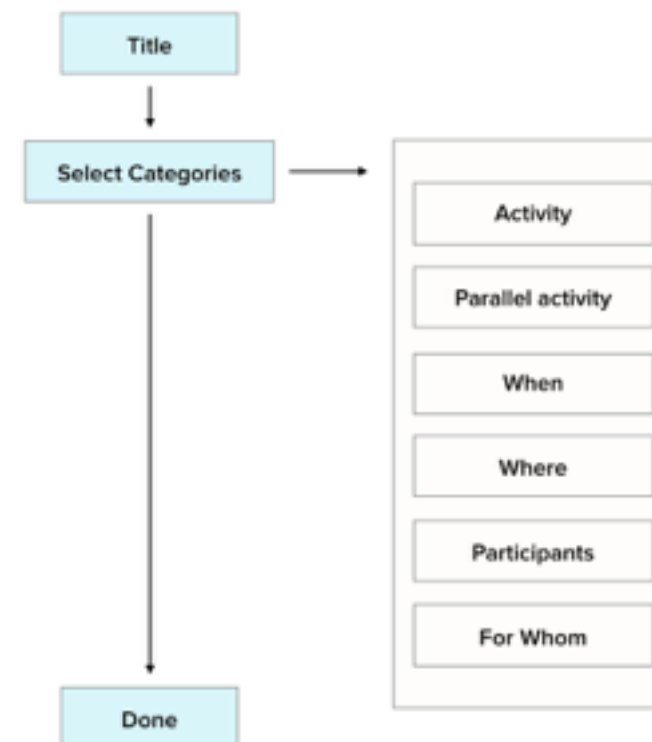
5. Early Design Ideas

The tool to collect Time Use Data needs to be able to assist both the researcher and the participants. Only if the participants find it effortless and seamless to give details of their activity through the day and sometimes more, will the research itself be possible. The collected data needs to be in a format easy for analysis so the work involving post data collection is less time consuming.



The Categories of data collection also need to be pre decided in order to make it more like a selection from a list process rather than writing details down.

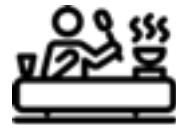
Keeping the fast life of India in mind as well as the literacy levels, a list of categories with options to select from would work best to select the from, rather than write pages of data.



Respondent in a day is doing multiple things and yet must be able to record his activity and time without causing much of a hindrance while being busy. Tags for activities and their icons might be a good way to help them select on the move.



Personal Care



Cooking



Exercise



Travel



Child Care



Work

I intend to use the list of activities as mentioned in A time-use survey design by Linda L. Stinson, and classification as per the government used in 1999 study and mentioned by Indira Hirway.

For Time Use Study, it is important to address the fact that a participant needs to record activity or remember it as granular as 5 minutes and sometimes it is not possible and a reminder or probe will be really helpful. The reminder has a friendly language to engage the respondent in a conversation.

For whatever level of accuracy one may reach, still more minute observations could possibly prove that some activities which seemed to be carried out simultaneously were in effect alternating with one another, or that some activities which seemed to be performed consecutively were factually overlapping to some extent.

- Alexander Szalai

Capturing simultaneous activity and context by the respondent is asking him or her a lot of time using the tool itself. In order to combine all the features a solution involving a smartphone is the best in this context. The tool makes this easy and less cumbersome by including location feature and smart collection of possible parallel activity like phone usage or call log. People have started using smartphones easily and can also be trained to use one if the interface is just picking from a list of options [\[19\]](#)

2019 - 270 Crores Smartphone Users

With so many people already using smartphones and with the projection the solution is a smartphone based tool that will combine all possible technological interventions and

6. Primary Research

Samay Lekha is based on Time Diary method which is from secondary research. The Time diary itself is done in many ways. Most methods require user to enter every activity through the day in columns. The traditional paper pen method, Diary on computer or phone and the recall diary method was tested to decide on which method to use in the tool.

6.1 Respondents

In order to test the methods Respondents of varied age groups from different educational and occupational background were approached. The purpose of the study was to find out patterns from the way Respondents entered data and this was followed by an interview. The names of the Respondents are kept confidential.

A total of 12 Respondents recorded data for 48 hours and were free to choose the method as per their convenience and the data were entered every time an activity was performed.

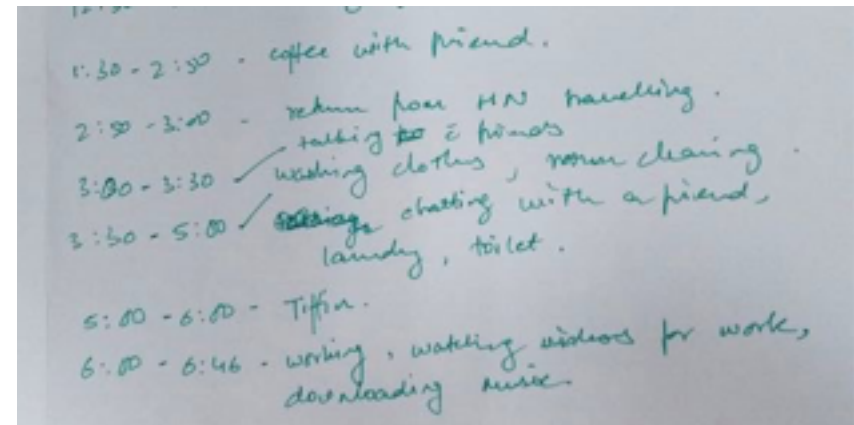
User Id	Gender	Age	Occupation
U 1	F	52	Home Maker
U 2	M	54	Banker
U3	F	27	Student - Engineer
U4	F	25	Student - Designer
U5	F	24	Student - Designer
U6	F	24	Student - Designer
U7	M	24	Student - Designer
U8	F	26	Student - Designer
U9	M	26	IT Professional
U10	M	59	Retired Marketer
U11	F	24	Marketer
U12	M	24	Coder

6.2 Testing different methods

The data was collected over a weekday and a weekend in order to get a glimpse of both since the same person does significantly different things during these two times. Few respondents did a combination of methods by trying the traditional diary method and then fill data online on consecutive days. They recorded most of the data online on the data sheet, but while travelling they came back and noted data down for the past hours.

Traditional Diary Method

Respondents were briefed to note time whenever they do an activity. The format was shared and they were all briefed.



U5, weekend

Time	Activity	Self	Nothing	Room	Room	Self	Tiffin	Self	Room	Shower, room, hygiene
12:30	toilet	Self	nothing	toilet	no-one	~ 5:30	work	Shower & H.N. room	Shower	
1:45	Break	Self	nothing	room	no-one	~ 7:30	work	Self	Shower	Room
2:30	Laundry	Self	nothing	room	no-one	~ 8:00	work	Self	Shower	Room
3:00	Laundry	Self	nothing	room	no-one	~ 8:30	work	Self	Shower	Room
3:30	Laundry	Self	nothing	room	no-one	~ 9:00	work	Self	Shower	Room
3:45	Laundry	Self	nothing	room	no-one	~ 9:30	work	Self	Shower	Room

U4, Weekend

Online Diary

The format was made on Google sheet and each Respondent had access to a sheet. They updated whenever they could from either their phones or laptop, since internet is not mandatory to fill data, it was convenient and the data synchronised automatically when connected to an internet source. (Appendix 2 has data from different users)

Day	Time	Activity	Parallel activity	Whom are you with	Where are you
15-Sep		sleeping		No One	Room
15-Sep	8:30 AM	wake up, get ready	wake up others	No One	Hostel
15-Sep	9:00 AM	breakfast	nothing	No One/ People in mess	Mess
15-Sep	9:25 AM	Auto to class	talking	Dixa, Shreya	Road Insti
15-Sep	9:35 AM	Statistics class	class related stuff	Classmates	Sr IxD

U4, weekday

Time	What was your main activity?	Parallel activity	place	Partici-pants	problem faced
6.10 am	saw baba picture in mobile. Lying in bed--browsed messages	thinking about office	home	wife	restless from the morning as I have to jot down meticulously
6.30 am	Got up frm the bed. Looked through the window and saw temple tower and woshipped	nil	home	none	
	toilet				
6.45 am	saw messages in moobile	nil	home	none	

U2, weekday

Recall Diary Method

Respondents entered data 24 hours after the activity was performed. The format was same as the format followed by traditional time diary method.

Whom are you with	Where are you	Difficulty
Self	Room	Unable to recall exactly when I woke up
Self	Bathroom	
Self	Bathroom	
Self	Laundry room	
Self	Corridor	
Self	Room	
Self	Room	Approximated
Friends	Mess	Not sure
Self	Insti main road, outside	
Self (People at the temple)	Temple	Do not remember time

U8, Weekday

Whom are you with	Where are you	Difficulty
Self	Hostel Room	cant remeber exactly when I woke up, must be after 0545 and before 0600
Self	hostel washroom	
Self	Hostel Room (virtually dharavi)	
Self	Hostel Room	time mentioned and taken for the task is approximated to nearest standard time and not precise
Self	Hostel Room	
Self	Hostel Room(virtually dharavi)	

U7, weekend

Self	Home	
Self	Home	Had difficulty in recalling what I was doing.

U2, weekday

6.3 Interview with the respondents

After the respondents completed data entry for 48 hours, there was a follow-up interview session. Respondents from different backgrounds who are currently students but have pursued architecture, engineering, design, banking, journalism were interviewed individually.

First the interview was an overview of the method they had chosen, then a discussion with the data entry sheet was done in order to look into each aspect in detail.

A detailed interview with each respondent lead to key findings, discovery of problem in the current system in this context and certain observations. An analysis of the same was done for design ideas of Samay Lekha. Through the design ideas from the identified problems, I attempt to address each of the key findings. The interviews were written down while discussing in shorthand and transcribed on to small bits of papers with one statement or observation on one piece.

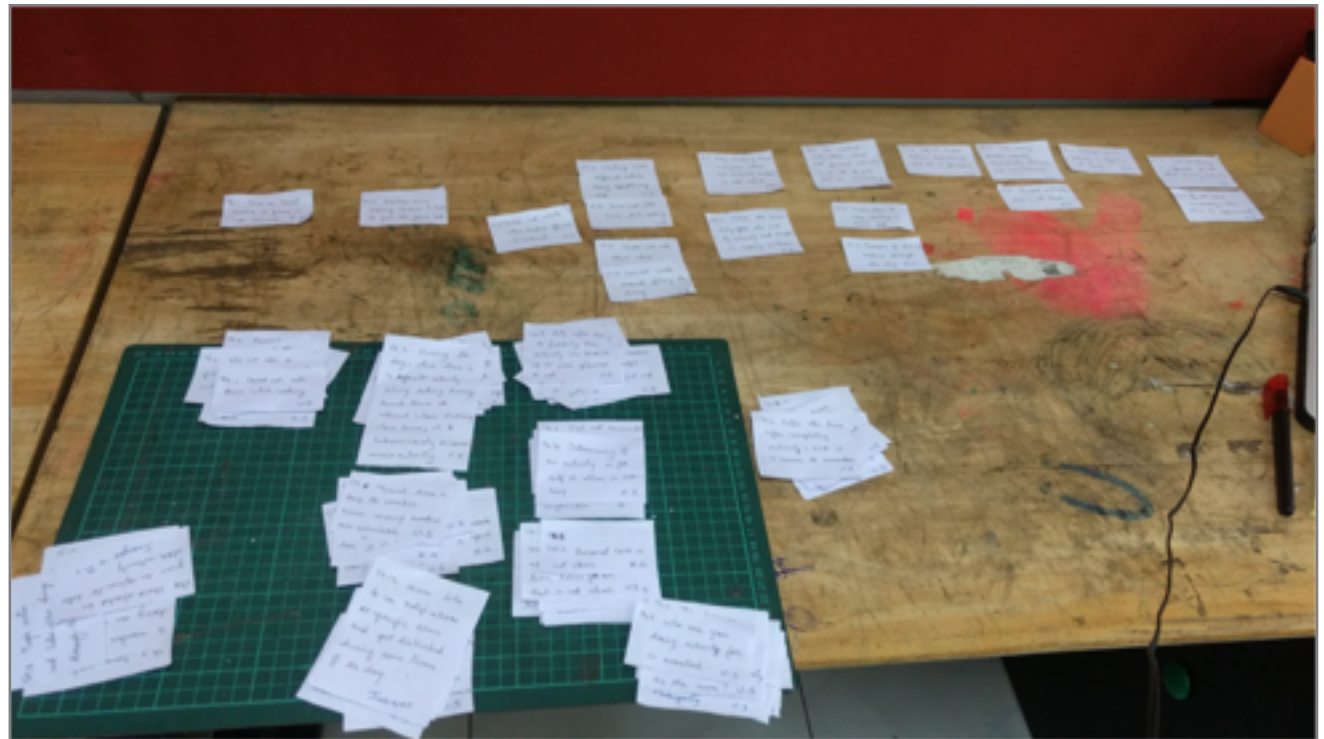
The Interview

The interview comprised of predetermined questions to set the respondents talking and discuss a line of thought. Not all respondents were asked the same questions and the order also varied according to the nature of data entered. The respondents were asked these questions

1. Have you ever used any data entry app before
2. When did you start entering data
3. What was your motivation to enter data
4. How convenient was it for you to keep entering data through the day
5. Will you want to use this method if you had to enter data for a week
6. What Problems did you face while recording the time
7. How did you note down the start and end time of an activity
8. When during an activity did you note the time down
9. How long did you spend in filling the data sheet
10. Did you fill in from laptop or mobile (not for respondents using traditional methods)
11. If not noted during an activity then when did you note it down
12. How long after an activity are you able to remember the details of it.
13. If the google sheet or diary is not available, how did you fill
14. How did you remember an activity later. Was there a way to remember.
15. Did you find it easy to mention the parallel activities
16. Did your behaviour change after seeing what you have done through the day
17. Did you feel monitored
18. Did company of other people influence your data entry
19. Where you you concerned about other people getting a glimpse of your data which is personal
20. How did you feel while filling the time diary

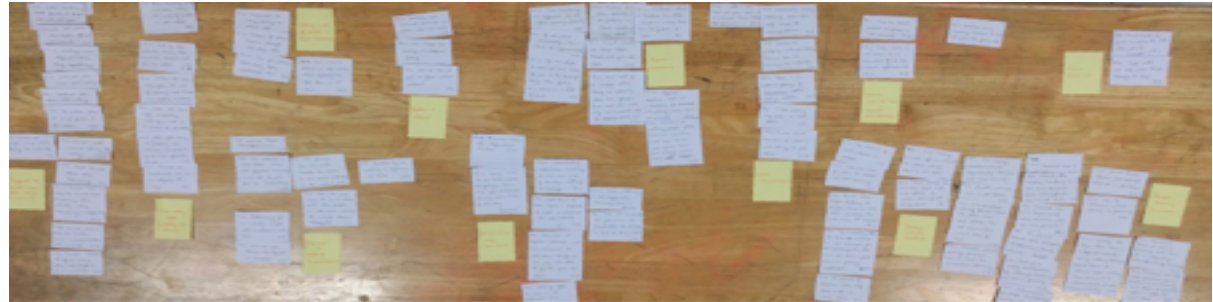
6.4 Affinity Mapping

To make an affinity map, all user statements were written down first and then every statement was transcribed on to single small sheet.



The participant statements were spread on a table and scrutinised for patterns

The important statements were highlighted, grouped together based on statements which were closely associated with each other with specific titles for further reference.



From the titles given to groups another set of affinity mapping was done to exactly identify the problems. In the order of priority, these were arranged and highlighted



6.5 Insights

Each respondent filled the sheet in a different way as per his or her convenience since it was left to them. Most of the diaries had granularity of at least an hour with respect to time. Two of them had not written context (location, other participants) in a separate column. Discussed next are from observations and respondent statements (Appendix 2).

- Recording time while doing an activity is difficult
- This was a rather important finding which had a small complication. Most respondents felt noting down time while doing an activity is difficult but if not noted while doing then recalling is difficult.
“If you don't write when you don't have time for it, you won't write when you do have time for it.” – Katerina Stoykova Klemer.
- While socialising with people can not do data entry
- There are many circumstances where the respondent is unable to jot down the details of what he or she is doing since they maybe engaged in a conversation with someone and more so while in a meeting.

participants	could not carry the sheet to clas as it is difficult to write while handling class
none	
none	could not jot down as talking to higher official

U2, Weekday

- Noting time or entering data difficult during travel
- While driving or travelling, it becomes cumbersome to take out the laptop or even the phone and fill in all the columns but
- Travel time easy to remember and acts as a marker
- The travel time is generally easy to remember because there are default markers with respect to travel like the tickets or messages or the time one enters his or her workplace.

U3, Weekday

- Markers of sorts help recall

UIC student centre	Had difficulty recalling parallel activity
--------------------	--

U8, Weekday

- During such times when in a meeting, or travelling some sort of a marker for the self becomes useful which can be later used to recall
- Most data entry happens after finishing an activity
- Notification in the form of a reminder to do data entry helps
- Reminders or timely notifications in the form act as a trigger since it is but natural for humans to forget while they engross themselves in various activities through the day

U2, Weekday

- Parallel activity time is not easy to remember
- Many a times, one does activities simultaneously and even if time for the primary activity is noted, the secondary or the

parallel activity is generally very confusing since it overlaps most of the times.

- Writing a lot of details is time consuming
- When data goes wrong and need option to edit.
- The activities are coded and made into tags which becomes convenient for the researcher to analyse.
- Media time is never accurate
- Since media has become second nature to human beings, it is never accurate when asked to self assess the time spent on any sort of media. - Alexis Ohanian [23]
- The feeling of being tabulated makes respondents restless
- The very structure of the Time Diary being that of a tabular column, people continuously feel observed and tabulated. Also through the day being able to see the activities done, people tend to change their activity in order to make the best of the day which is not the focus of the study. Then the data get manipulated.

6.6 Design Decisions

Based on the insights, observations and key finding design decisions were made. One main finding was that carrying a laptop or a diary around was not possible at all times as much as maintaining one was cumbersome. The solution is a smartphone application with features based on design decisions as listed below.

Difficult to record during an activity but if not recorded can not recall later

Reducing the interactions to only a single action. Just a start and stop so the respondent is not hindered while performing an activity and concentrates on the work at hand instead.

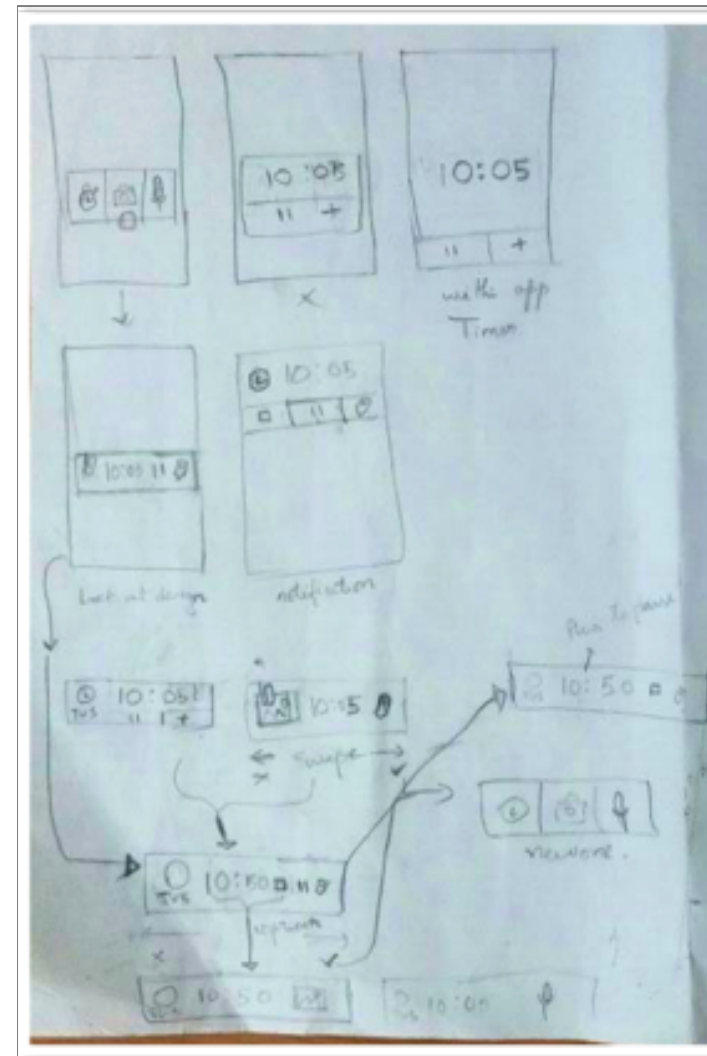
The single touch to start button should also be accessible very easily and each participant should be able to move it around and position as per requirement.

Details of an activity is marked after the completion of it

Most participants filled details after finishing an activity though provisions for entry in between is also there.

Data entry is not difficult, but measuring time is difficult

A timer to calculate time, start and end of an activity to reduce the cognitive load on respondents



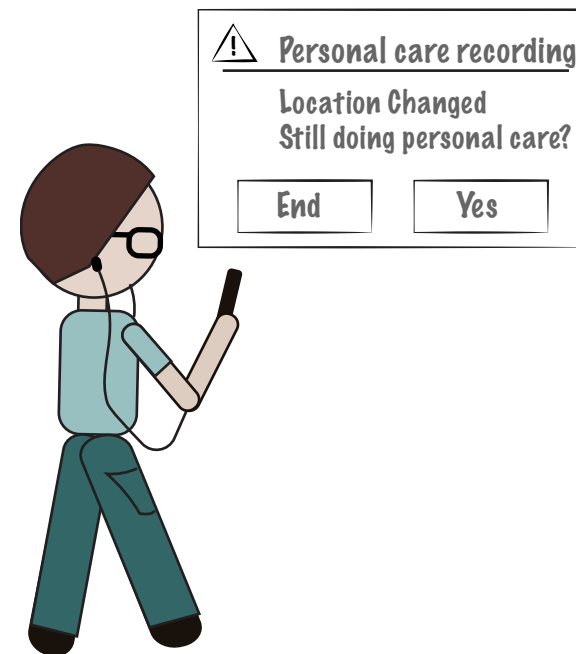
Timer Exploration

Reminder (probe) helps

A notification every one hour which acts as a reminder will help participants remember that they need to enter data.

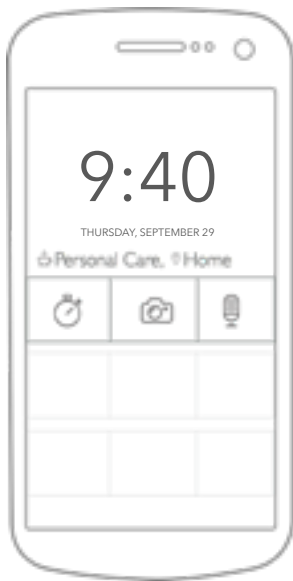
Recording time while travelling is difficult but travel acts as a marker for recall later.

Based on location there can be markers attached to activity and that sends smart notification for respondent to remind him of data entry as well as what the activity itself was.



A marker of sorts helps recall later

The tool gives provision for recording while doing an activity but a recall option later by allowing for markers



There is provision for multiple input methods where the camera and microphone of the phone is utilised to add quick markers (explained through scenario in the next section titled Scenarios) These markers act as reminders for later doing data entry at a convenient time chosen by the respondent (explained below)

Context Awareness

Location, time of the day, day of the need not be filled by the participant. The time spent on media or a call can also be captured by the tool. With location comes markers which can automatically remind an activity.

Your current location

 34, padma nagar, Baroda

Make this

Home
College
Hostel
Mess

*keep GPS on for au

Whom are you with	Where are you	Difficulty
self	Hostel Room	cant remeber exactly when I woke up, must be after 0545 and before 0600

While setting of the tool the participant can mention the time when he or she does not wish to be disturbed, so the tool only sends notifications accordingly. All the notifications and probe are in a humanist tone for a conversational feel

Salient Features

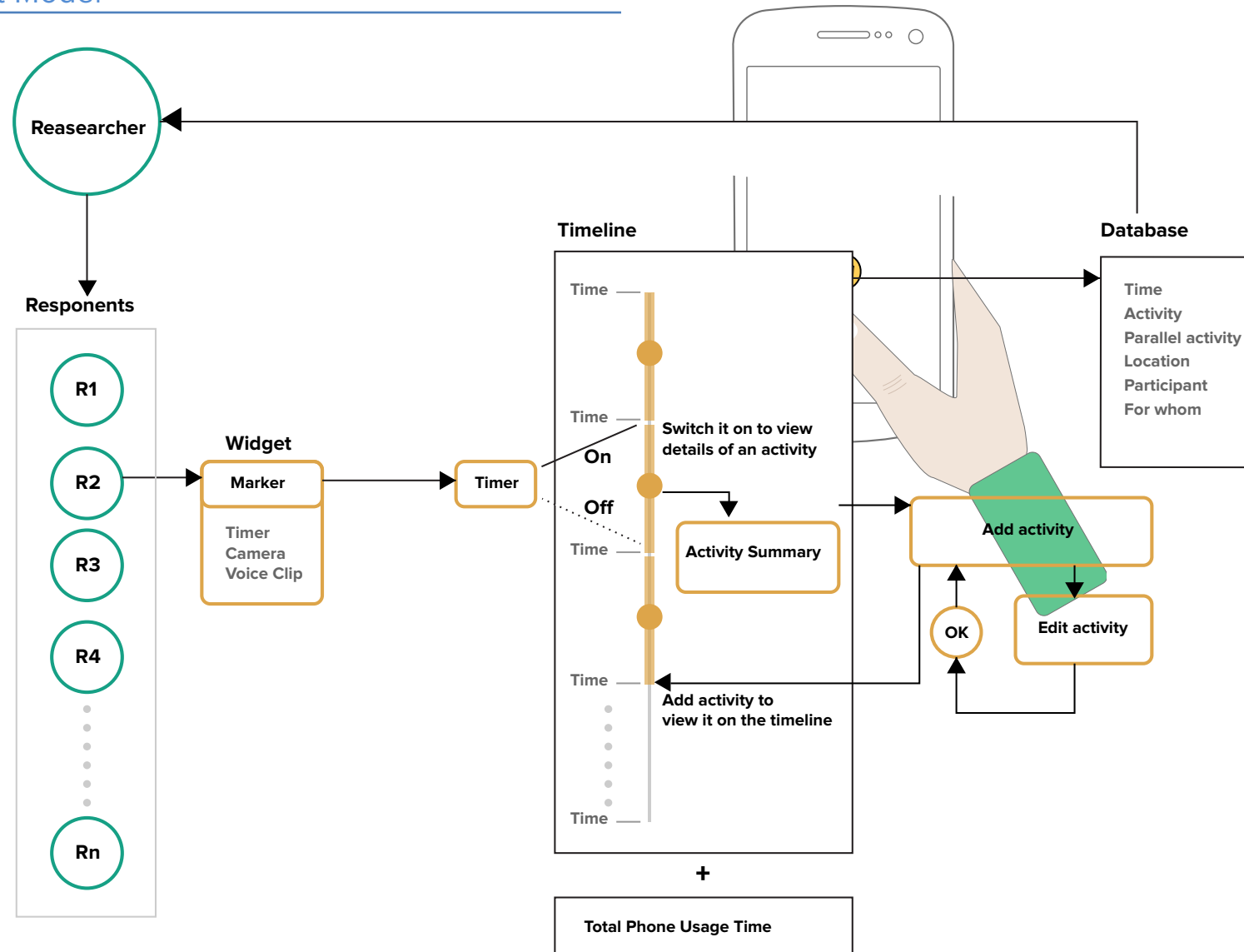
- Context aware tool for collecting time use data.
- With context, switch a lot of the thinking process to the phone (app), so that users never have to tell the app things it already knows.
- Reduce the interactions (respondent uses it many times a day) and make the interface easy to use
- Hide the table so the respondent does not feel tabulated ever
- Never show the user all his day's data at once so that he does not manipulate data

Features at a glance

- Timer Widget
- Multiple Input points - timer, camera and microphone
- Automatic Location tracking
- Tagging from widget
- Sorted activity list
- Photograph and voice recording as markers
- Activity Timeline with context
- Data sheet

who was with you	problem faced
wife	restless from the morning as I have to jot down meticulously

Concept Model

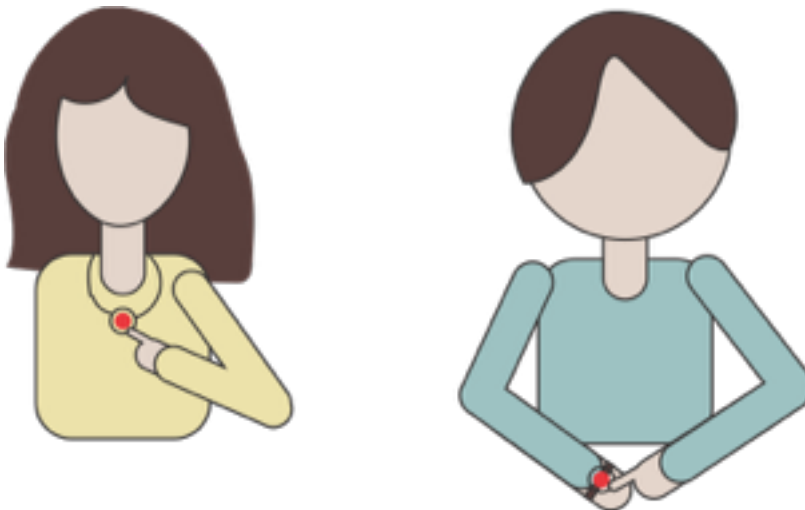


7. Design Explorations

The design decisions were explored in three ways and one of them is the final design for Samay Lekha. Keeping the focus intact in all the explorations as a context aware tool, which makes time use data recording effortless, the strategy remains the same while surface level explorations were done as shown here.

7.1 External Trigger

The idea was to take the trigger to start the timer with a single click operation out of the smartphone or any device. The trigger is a small button that can be affixed on a watch or a pendant thus enabling the respondent to just wear it all day long and the trigger is just a press.



Pros

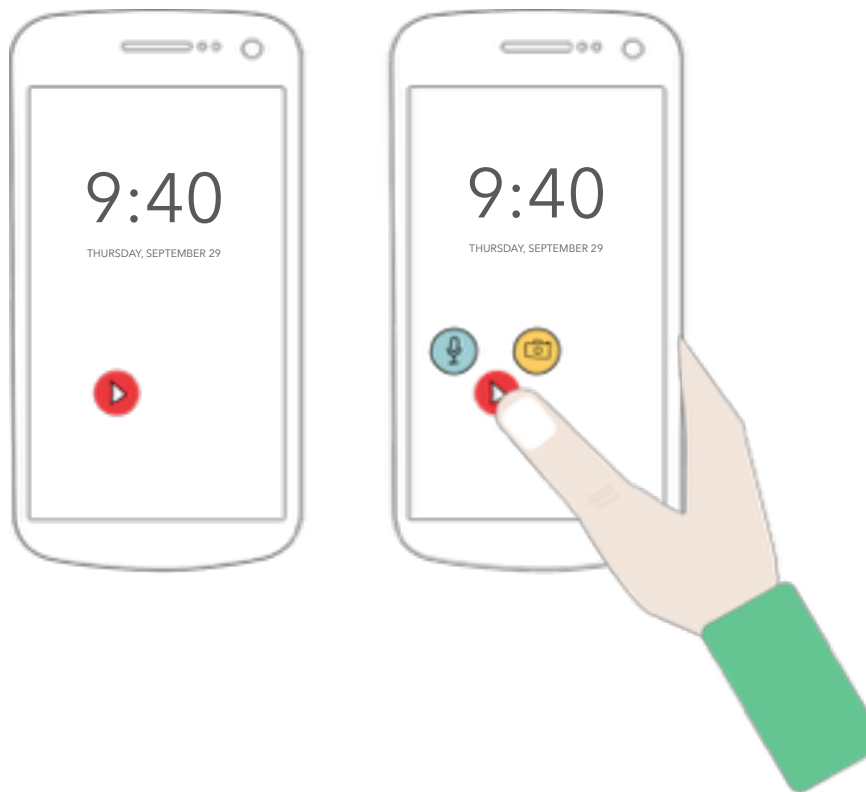
- Single action interaction
- Does not require to fish out the phone
- Triggers a timer on first press and the second press stops it
- Connected to the app and time gets logged

Cons

- But no way to mark the activity so one would not know what a recorded time represents.
- Phone needs to be in proximity to stay connected

7.2 Single button timer - press and hold for options

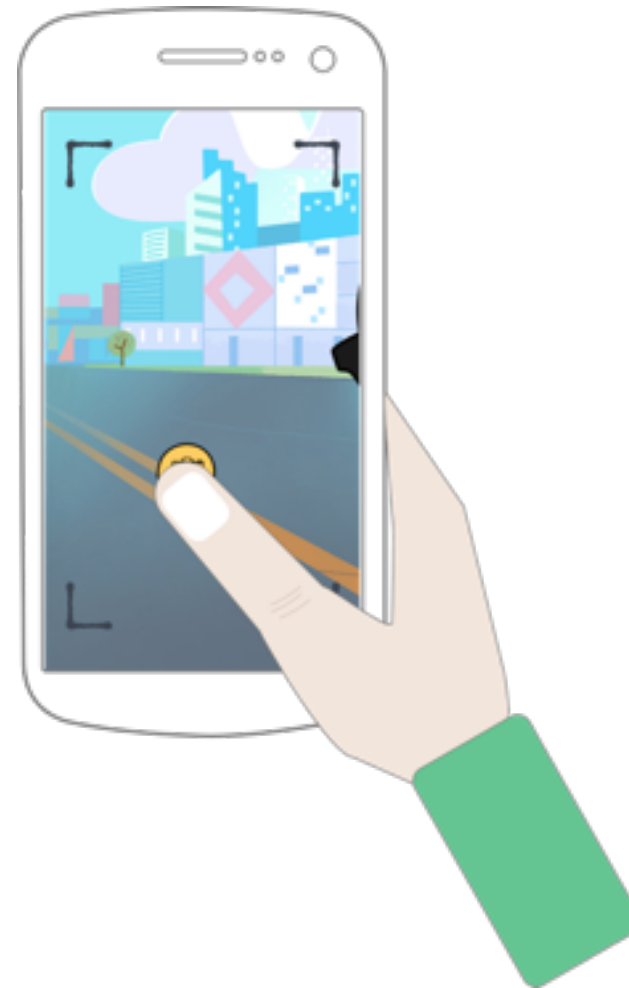
This design exploration is more like an initial stage for the final design where most of the app flow did not change. What changed is the one button trigger which is important for the tool as it is a design idea for a key finding. The idea is to have translate the external trigger onto the smartphone.



The single trigger button can be placed anywhere the respondent wishes to. When one starts an activity, he just needs to long press it and he gets two options to choose from. One is the camera and the other is the microphone option. If nothing is selected, just the timer starts. All three options start the timer.



Once the timer is turned off there are options to choose from. The activities are in a dropdown list which on choice gets added as a tag to the time recorded.



Further the camera allows the respondent to quickly click a picture

[18] of the activity in front of him or anything that can act as a reminder later. Similar is the function of a recorder. The main idea is that if the respondent has time, he or she will update all details then but when on the move they can make use of the quick camera and mic options.

Pros

- Less interactions with the phone
- It is easy to learn to use the application
- Reminders can be easily added
- Activities is a list from which selection is easier than typing them out

Cons

- The options are not visible upfront
- Certain interaction may hide the options

7.3 Timer on a Widget

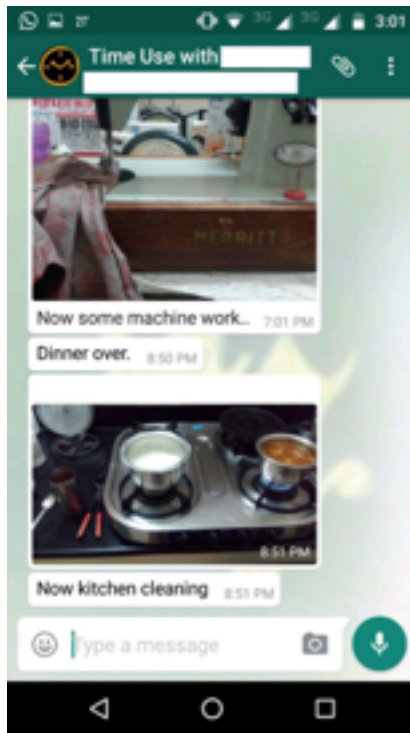
The third exploration is heavily borrowed from single button timer exploration. This is the wireframe of final design which is explained below through a Scenario. The idea is to have all the options upfront, so the respondent can quickly choose from one of the input methods to start a timer and set a reminder simultaneously.

The scenario throws light on a research journey starting from the problem, the hypothesis and the research. I attempt to explain various feature that the tool will have through single day entry by a respondent.

The location is always tracked and recorded by itself and the calendar is synchronised with the application so that data is automatically filled.

8. Feature Testing

In order to make this effort intensive process of data entry seamless with the daily routine of respondents, the design decision of Samay Lekha has a lot of features. There are multiple input methods for recording time, which was based on Respondent interviews. Through feature testing, the validation of different features is explained below.



The test required respondents to be able to try camera option, voice record option and the advantage of being notified to see how these input methods benefit them and how frequently they use them. Since whatsapp has all these features embedded in chat option, this was used to test the features.

A whatsapp group with me and one respondent was created for every respondent. Every time the respondent does an activity they were briefed to make an entry. And they were free to use the camera or microphone to assist them.

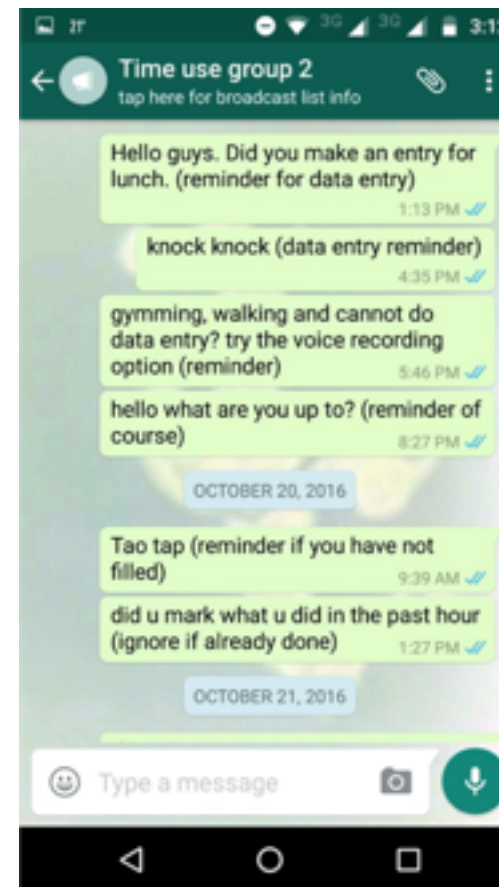


An icon of a clock to identify that this is a Time Use Study group was also added. Each groups were names as Time Use with followed by the respondent's name.

Then a broadcast group with all the participants was made which was used to send out notification and reminder at regular interval. The tone of the notification was friendly to create the impact of a conversation rather than a machine generated notification.

The reminder after every hour helped the respondents to remember to do data entry. Most respondents in about a minute or two entered data after every notification. Some reminders just said knock knock or tap tap and that was enough to remind them.

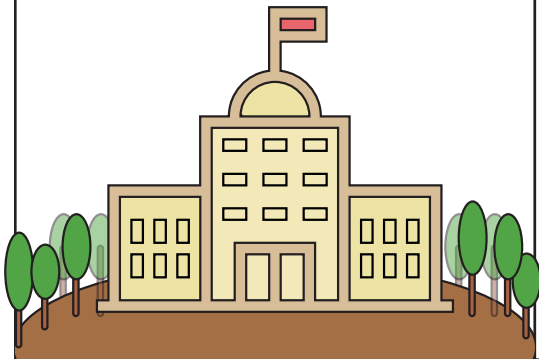
A respondent said “such notifications brought smile to my face”



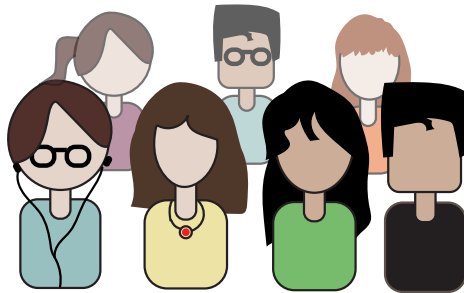
Broadcast Group

Scenario

The performance of math department in a top university suddenly drops while all the other departments perform well. Concerned, they talk to the students and the students feel very stressed and rushed.



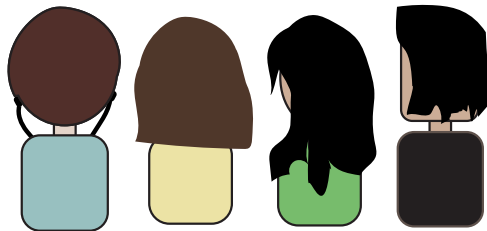
They felt busy all the time and could not perform well and the university conducts a Time Use Research on the students of mathematics department to see when the students actually were pushed too much and where they needed an alteration in the schedule.



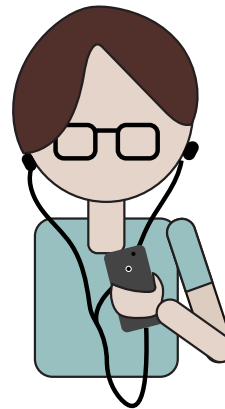
So researcher Sundar decides the number of students he wants for the research. He prepares for research by deciding the categories, parameters and number of days for research and sends the app out.



Sundar briefs the respondents who signed up about the research after which volunteered students install the app.



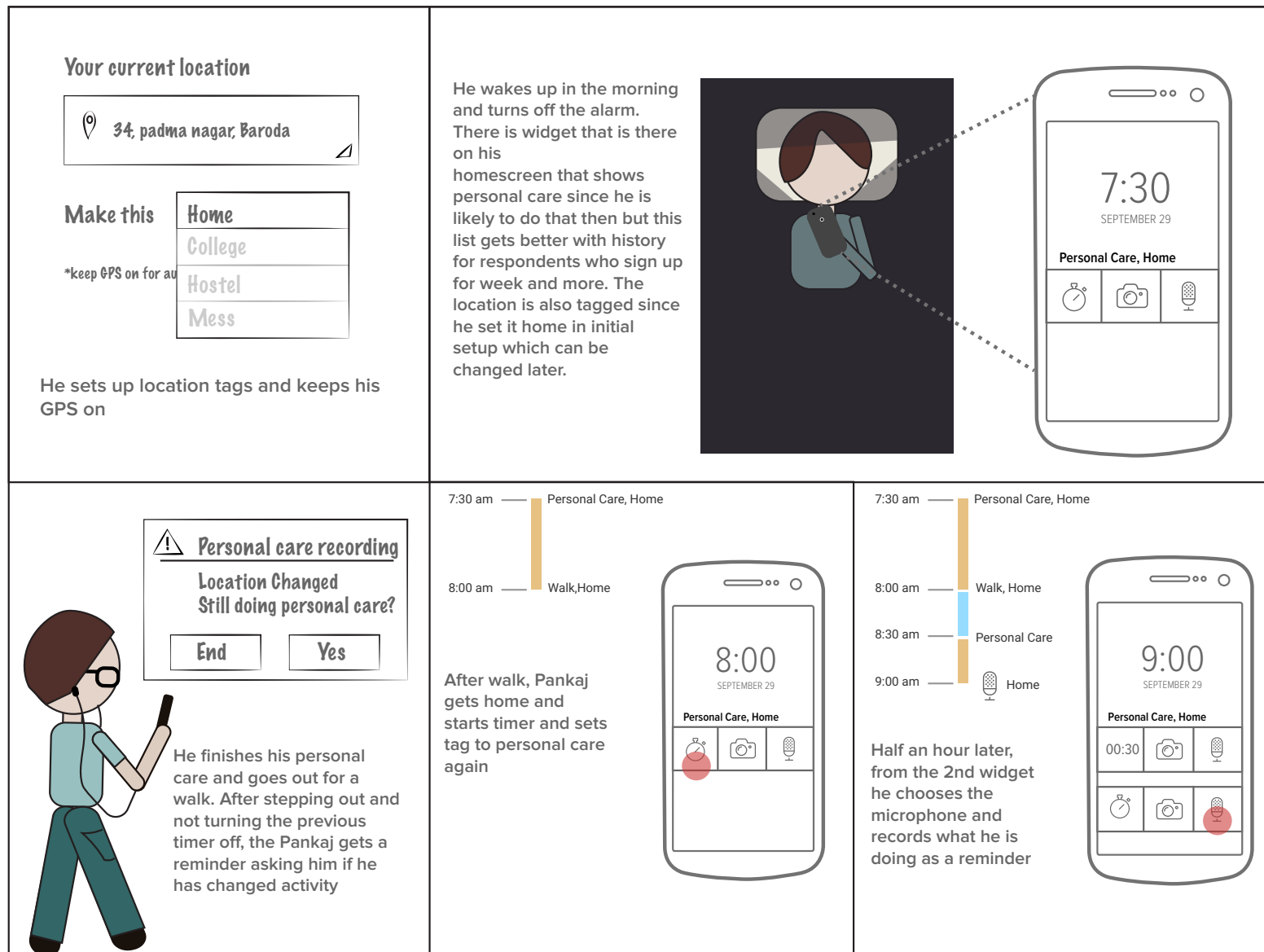
Pankaj is one of the respondents. He downloads the app, installs it and gets a warning about the data that is going to be collected and assures confidentiality. He agrees to record time for the research and goes through the app tutorial.

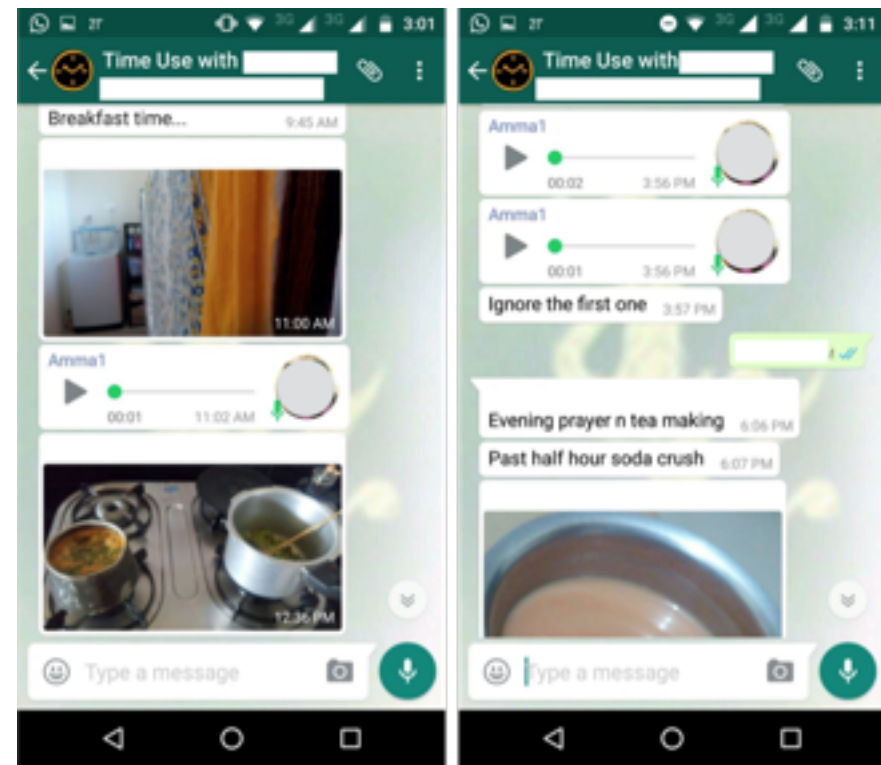
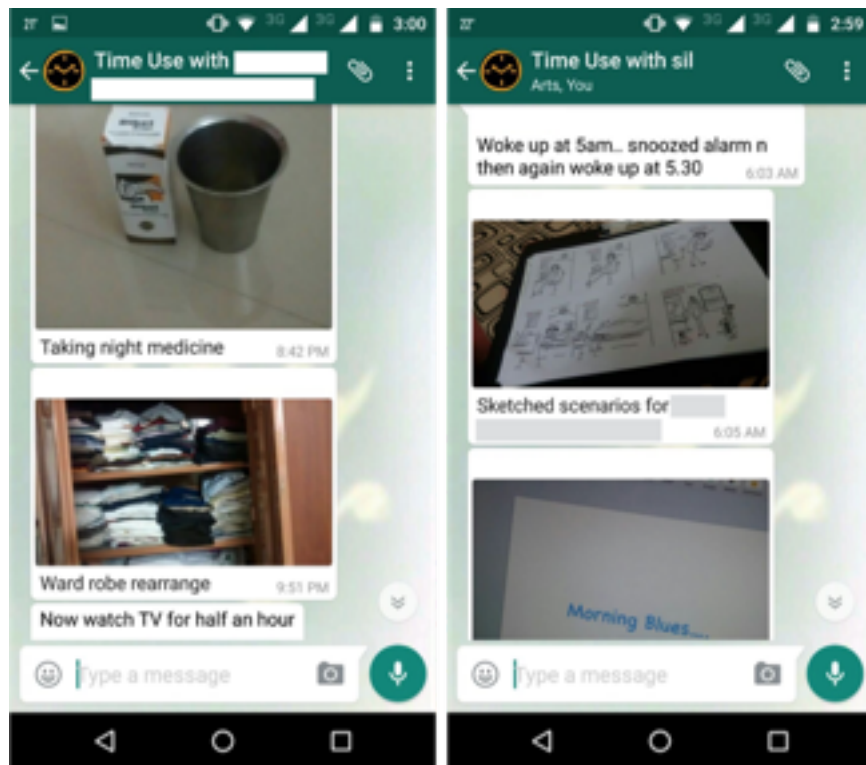


When should I not disturb you

10:00 am ▼ to 12:00 pm ▼ (+)

A few initial setup to give better reminders and markers. The time when Pankaj attends class is set for do not disturb





Respondents used the option of clicking pictures or recording voice whenever they were busy and tagged them. The same respondent used all the three input options as when required. The photographs were used more often but when they were in social places like a shop or a restaurant respondents switched to voice messages.

9. Final Design

After feature testing, how respondents used different input methods to record time became clear. Based on the observations and findings and from the wireframes the final flow and screens for Samay Lekha were made.

The main feature is a widget that needs to be added on the home screen preferably or any other. The widget is to let the user quickly access the timer, the camera and the microphone. The list of activities are also accessible from the widget. The app itself only mainly has the timeline of the entire day.

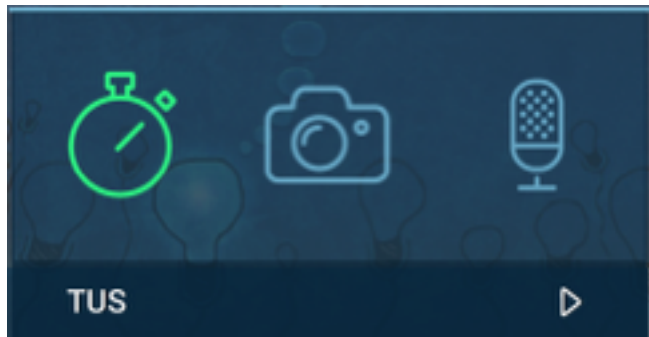
Life is short. No one wants to fill out a form. Be conversational. Be funny. Gradually engage. Do the unexpected. It is the role of the designer to express their company's brand to elicit an emotional reaction. If done correctly, it will increase completion rates. Just make sure you don't violate the rules listed above. - Data Entry by Andrew Coyle in ux design

The design is to make the respondent not feel the effort while entering the entire day's data. The conversational notification and ease of interactions with the app itself makes it a seamless experience. Two design explorations and the final design are explained below.

Widget

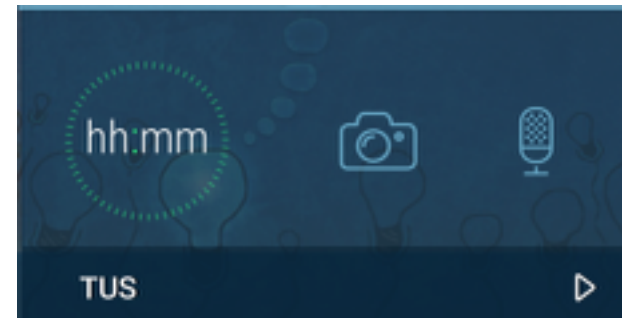
The widget requires just a single button click to start and stop a timer thus enabling respondent to record the timer and tag the activity before starting the next timer.

It comprises of icons of the timer, camera and microphone. All these three icons start the timer on clicking. The camera starts the timer but also lets respondent to click picture of the activity. The microphone along with turning turning the recorder on, allows the respondent to record anything related to the activity.



The widget is 4X2 ratio and can be resized to 4X3. The TUS here is for Time Use Study. The portion containing that when clicked takes the respondent to the application. The icons are placed in the order of frequency of usage.

There is a variation to this timer widget.



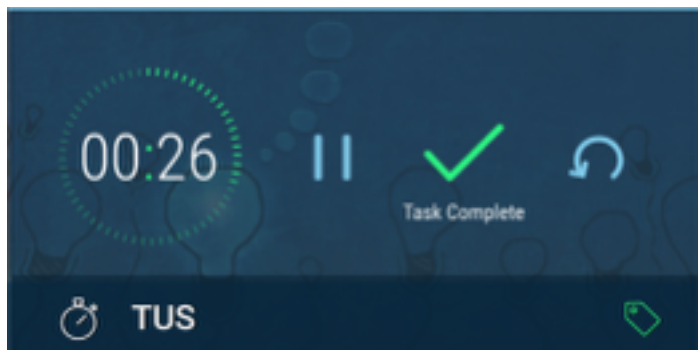
The timer icon is replaced here with a stopwatch interface. But respondents thought that they first had to start the timer and then camera to for attaching a photograph but all the three options started timer. The camera and mic were to also add markers to remind respondents later in their convenient time to recall using the reminder and update the data. This is explained in through flow of the app.

Timer

On starting an activity the respondent is required to start the timer by choosing one of the input methods. If the choice is timer, then the timer starts and is ready for tagging



Design1



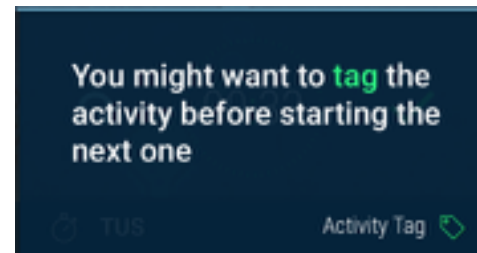
Design 2

Design 1 is used in final design since the focus in Design 2 shifts to completion of the task. In the first one the pause option is just tapping the timer once. The restart icon sets the timer to 00:00. The tick marks the end of activity.

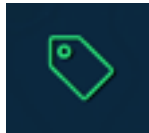
The timer icon here in the lower panel is to say the the input method is that of the timer. When the method is camera or mic it appears like this



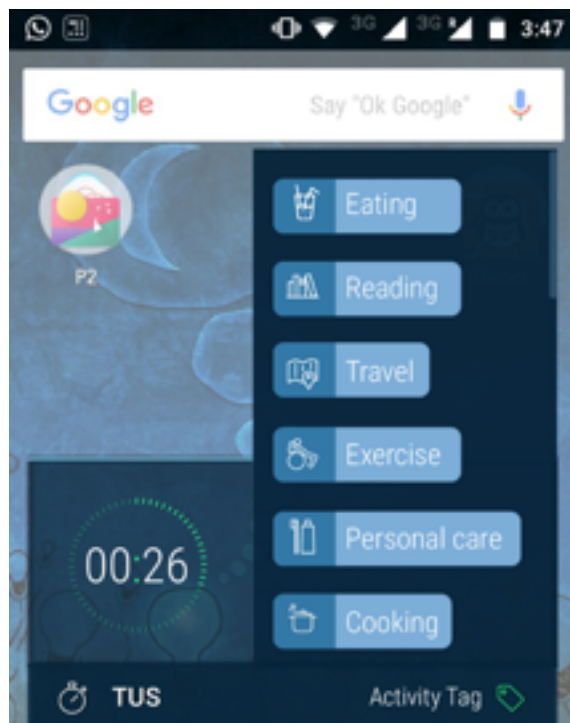
If ticked without tagging there is a glance-able warning to indicate that the activity has no tag since the respondent will not be able to place the activity related to the timer later.



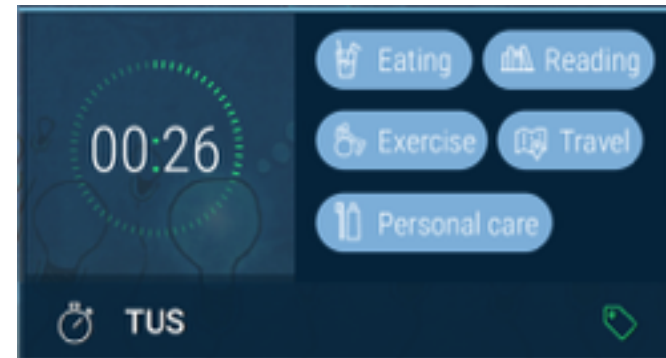
Activity Tags



On clicking tags icon from the main widget or from the warning screen gives a drop down list of activities. The activities are based on the proposed list from



Design



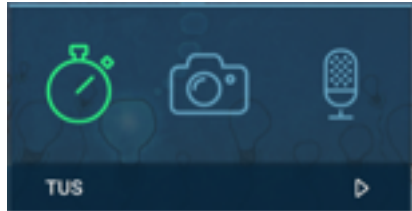
Design2

Design 2 did not work because the android list does not allow grid system. Also the widget needed more real estate for glanceability.

In design1, wherever placed the list takes 2X4 of the available screen. The list is smartly sorted based on context and the top three are based on what the participant is most likely to do at the time and location of tagging. The tagging can be done anytime while the timer is running. Once a tag is added it appears like below.



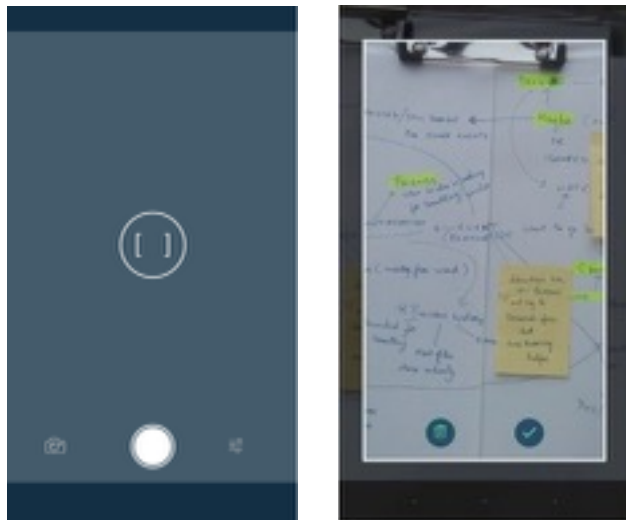
Camera and Microphone



When camera or mic icon is tapped from the widget, It takes the respondent to respective screens.

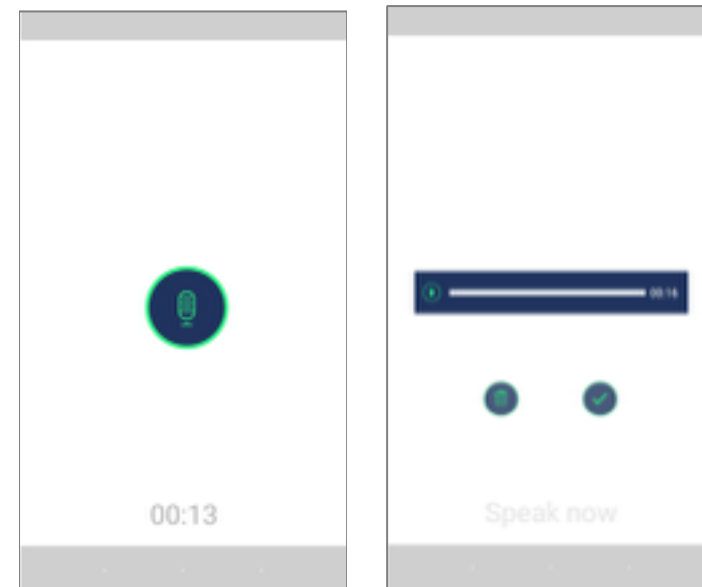
Camera

One clicking on the camera the timer automatically starts and the respondent can also click any number photos or choose from gallery.



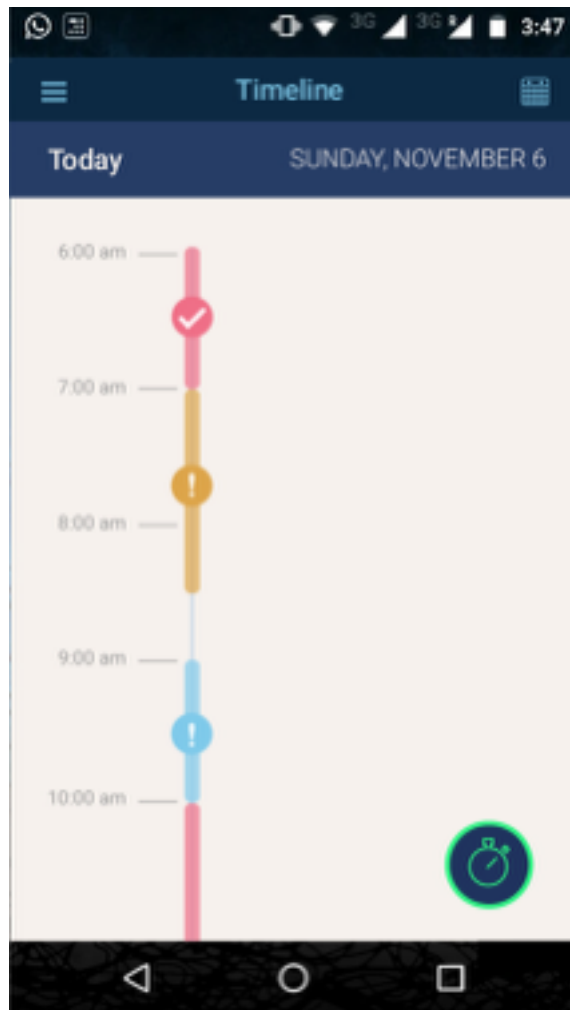
Microphone

When mic icon is tapped, the timer automatically starts and the respondent now record the activity with context or any reminder to help him or her add edit it later in the timeline.



In both the cases the marker gets added in the timeline which can later be edited as per convenience.

Timeline



On tapping on the TUS icon from the widget or the icon from the app drawer the respondent can access the timeline. The homepage of the app is the timeline. The timeline is a 24 hours view and every activity recorded within a 24 hour span appears in a single timeline.

The time appears on the left and the activity is marked by three colours based on input method to record time. The pink is for activities recorded using a timer. The yellow is for camera and blue is for microphone



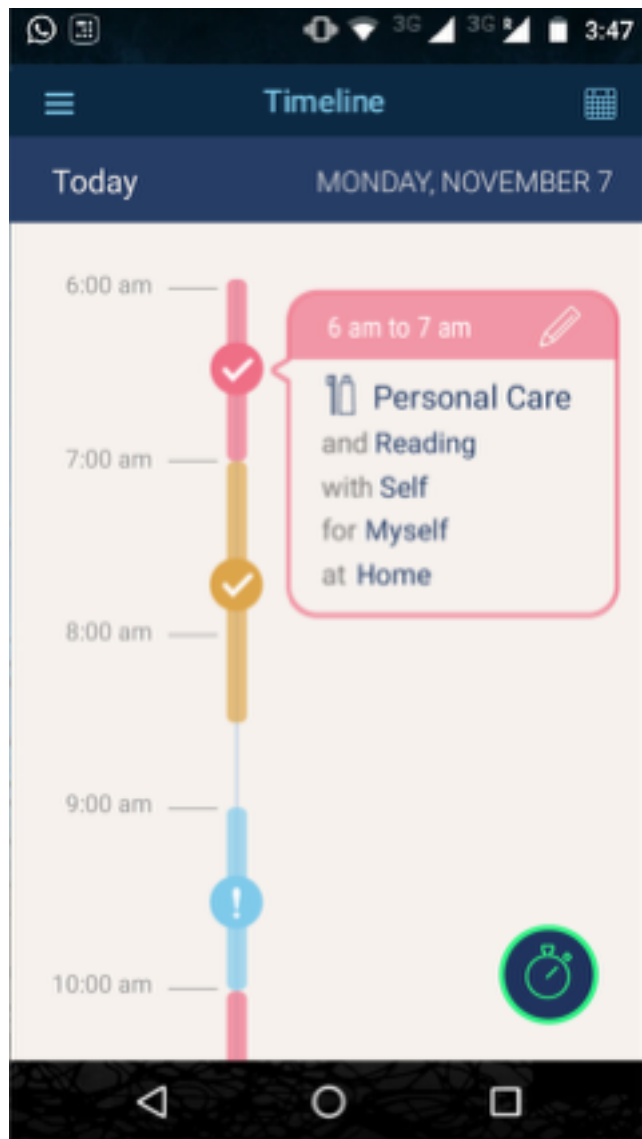
Exclamation means the activity is not completed on the timeline. Still some editing is required which means not all fields are completed but some marker is added. On tapping the Exclamation, the user gets to edit the activity to update it.

Edit Screen

All the attributes attached to the the activity are shown here.
Respondent can clearly see which is updated and which is not.

Just choose from a dropdown list.

After filling all the fields or editing as per requirement a tap on the update button updates it on the time line



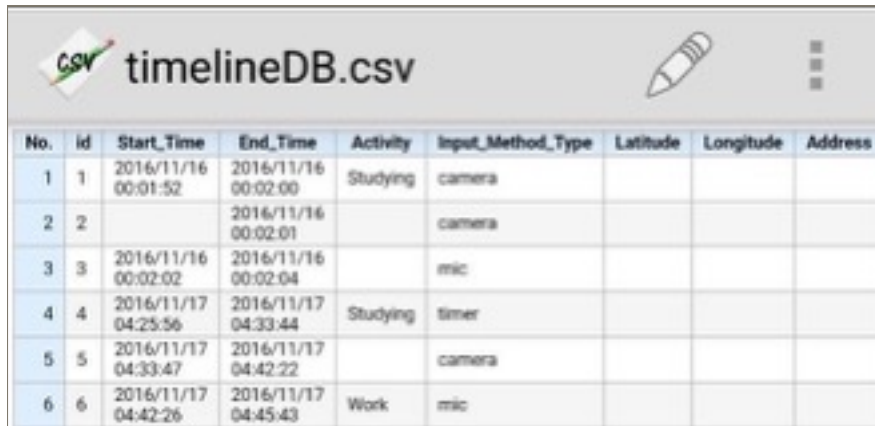
The Activity box shows attributes with conjunctions to make it like a conversation. Personal care and reading with self for myself at home. The timeline at any time does not show all the attributes or details in order for the respondent to not change behaviour.

On a single tap one opens and when another one is opened the first one closes. The calendar allows previous days viewing. The burger button contains about the research and tutorial for the application.

The timer icon in the bottom right corner of the app screen is to record time from the app or to stop a timer if already started

Data Base

The data gets saved in the database and the details are in a simple format based on the tags. This can be easily viewed and sent to the researcher. The option to extract this is available in the burger button from the app.



The screenshot shows a mobile application interface for a database named 'timelineDB.csv'. At the top, there is a header bar with a 'CSV' icon, the title 'timelineDB.csv', a pencil icon for editing, and a hamburger menu icon. Below the header is a table with the following columns: No., id, Start_Time, End_Time, Activity, Input_Method_Type, Latitude, Longitude, and Address. The table contains six rows of data representing different activities over time.

No.	id	Start_Time	End_Time	Activity	Input_Method_Type	Latitude	Longitude	Address
1	1	2016/11/16 00:01:52	2016/11/16 00:02:00	Studying	camera			
2	2		2016/11/16 00:02:01		camera			
3	3	2016/11/16 00:02:02	2016/11/16 00:02:04		mic			
4	4	2016/11/17 04:25:56	2016/11/17 04:33:44	Studying	timer			
5	5	2016/11/17 04:33:47	2016/11/17 04:42:22		camera			
6	6	2016/11/17 04:42:26	2016/11/17 04:45:43	Work	mic			

Activity Database

10. Evaluation

The goal is to make data entry less effort consuming, comfortable to use while on the move, less interfering with daily activities, less cognitive load while keeping track time, easy to learn and remember to help the respondent contribute to Time Use Study. Keeping this in mind, my hypothesis is more number of people can contribute to data amidst their busy schedule.

The various features to achieve the goal were tested once before the final design was made during the feature testing phase. Based on the results the final design decisions were made.

A mock Time Use Study was conducted. Respondents were selected from different demographic backgrounds and briefed about the study. Then the respondents who were willing to contribute to the study signed up to record data for 24 hours using Samay Lekha.

This data was received in the form of data sheets with only user id and age. The name, photographs and voice clips was only in the users' app and was not sent to the researcher. Respondents were interviewed with a set of questions post the data entry goal in mind.

10.1 Users

Total no. of Users	32
Think out aloud	9
Data entry for 24 hours	23
Age Group	22 - 72
Occupation	Students, Homemakers, Bankers, IT professionals, Business man

10.2 Method

Pre Experiment: A demo of how to do data entry using the widget was shown. They could try all three input methods once and get their doubts clarified

Experiment:

There were three tasks for the users to perform during think out loud test. Each user had to do a data entry using three different methods and think out loud about every step. Time taken to perform activity was recorded.

Then 3 situations were given to the respondent and they were asked which input method they would prefer when in such situations.

Then all the users installed the application on their phone and set the widget on their screen. Each user then had to record their activity for 24 hours from the time they started.

Then the users filled a form with questions that were framed based on the usability goals for Samay Lekha. The results are discussed in the next section.

10.3 Results

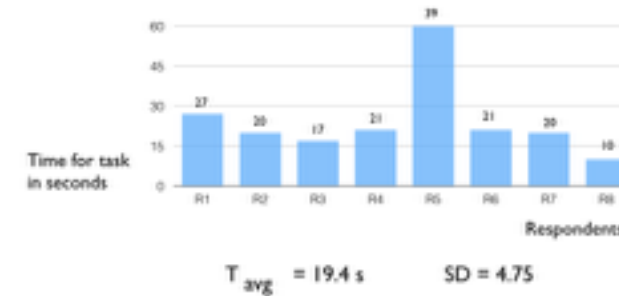
It was observed that the average time taken to record and activity using camera was 19.57s with a standard deviation of 5.47. While the average time was 19.4s while using the microphone to record an activity with a standard deviation of 4.75. The users spent almost same amount of time while using both the methods.

Task 1 - Camera method



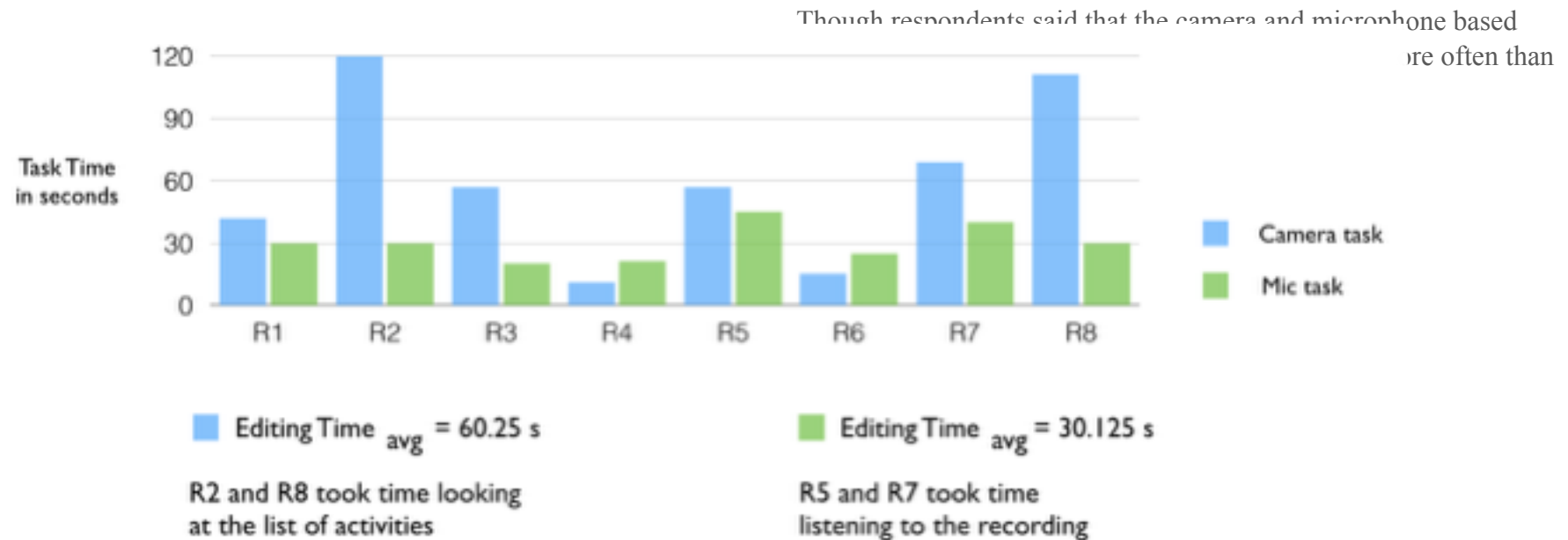
R7 took time since the respondent added a photo, ended an activity, and also edited it from the timeline unlike others who only added an activity.

Task 2 - Microphone method



R5 recorded a long note since the respondent was confused that the recording was to be done till the completion the activity.

After adding a marker for an activity, the respondents edited the activity and added all the required fields. The time taken to do the second activity was less since there was learning which shows how through the day the data entry will take lesser time.



10.4 Qualitative Findings

It was observed that all the respondents used the camera or microphone method to add markers which they could edit later. The choice was made according to situations. A respondent clicked the picture while eating with his friend but added a recording as a marker while shopping. Markers were only used when the respondents were occupied to make a complete entry else they directly entered all the details.

the markers. Most respondents felt that using the camera or microphone was convenient while walking since they had to dedicate less time to record the activity.

All the respondents felt that the tool was easy to use and learnt it by trying it once. While only some of the respondents were willing to use the application for a week, all of them were ready to use it for 24 - 48 hours.

12 respondents had also participated in the user studies in the beginning where they had to write down every detail of an activity. All of them felt that while using Samay Lekha the option of choosing the activity from a dropdown list was way more convenient. They also slowly developed an idea of the activities in the list and chose it faster.



Since Samay Lekha has a timer running constantly on the screen, many respondents claimed that they were getting distracted or conscious of the amount of time spent on an activity. A respondent even changed their activity duration because of the timer. This is not the actual time they would take to perform an activity. Based on this, the next section has some design ideas for future changes to Samay Lekha.

11. Future Work

Many respondents prefer using just one of the markers while some like to use all of them depending on the situation. The current widget in Samay Lekha donate permit respondents to just have one of the input options on the screen. The idea is to provide them with single input options also so every respondent can make their choice. This also allows one to arrange the widget according to their convenience.

The respondent can then tap on any of the input methods and the timer turns on. But it doesn't show the time taken to do an activity explicitly on the screen. Once an activity is over the respondent can tap on it again and it gets submitted by default. There is a 10 second period before submitting, which can be used to cancel the submission.

This allows for parallel timers to also work. While one timer using an input method is on another widget can be used for multitasking.

Timer is not shown. Indicator to just indicate the timer is on.

12. Conclusion

Time Use Studies is a tedious process nonetheless data collection can be made easier for both the respondent and the researcher by incorporating technology. People are willing to take out some time to contribute to the study if the work load on them reduces and they are able to peacefully continue their daily activities. Samay Lekha, a tool that provides multiple input methods to record an activity along with its context on the go, provides positive reinforcement in the area of Time Use Study.

This study has also provided insight into the adoption of different methods and features to record time. The underlying idea of the study is to see how by incorporating the many features of a smartphone, the arduous process can be made faster, efficient and less monitored. Tools like Samay Lekha can be very helpful in bringing researchers and respondents together thus making research such as TUS possible.

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14. Appendix 1

TIME USE SURVEY - CLASSIFICATION USED IN THE INDIAN TIME USE SURVEY

I Primary Production Activities

11 Crop farming, kitchen gardening, etc.

- 111 Ploughing, preparing land, cleaning of land
- 112 Sowing, planting, transplanting
- 113 Application of manure, fertiliser, pesticides and watering, preparing organic manure, harvesting, threshing, picking, winnowing
- 114 Weeding
- 115 Supervision of work
- 116 Kitchen gardening – backyard cultivation
- 117 Stocking, transporting to home, guarding or protection of crops
- 118 Sale and purchase related activities
- 119 Travel to the work

12 Animal Husbandry

- 121 Grazing animal outside
- 122 Tending animals – cleaning, washing shed, feeding, watering, preparation of feed
- 123 Caring for animal : breeding, shearing, medical treatment, grooming, shoeing, etc
- 124 Milking and processing of milk collecting, storing of poultry products

125 Making dung cakes

126 Poultry rearing – feeding, cleaning

127 Other related activities

128 Sale and purchase related activities

129 Travel to the work

13 Fishing, Forestry, Horticulture, Gardening

131 Nursery – seedlings

132 Planting, tending, processing of trees

133 Collecting, storing & stocking of fruits, etc

134 Wood cutting, chopping & stocking firewood

135 Fish farming, cleaning sea-bed, feeding fish catching fish, gathering other aquatic life

136 Care of house plants, indoor and outdoor garden work

137 Flower gardening – landscaping, maintenance, cutting, collecting, storing

138 Sale and purchase related activities

139 Travel to the work

14 Fetching of fruits, water, plants etc. storing and hunting

141 Fetching of water

142 Fetching of fruits, vegetables, berries, mushrooms etc. edible goods

143 Fetching of minor forest produce, leaves, bamboo, etc.

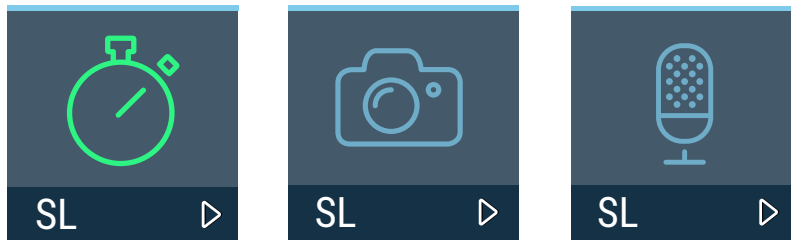
144 Fetching of fuel/fuel wood/twigs

145 Fetching of raw material for crafts

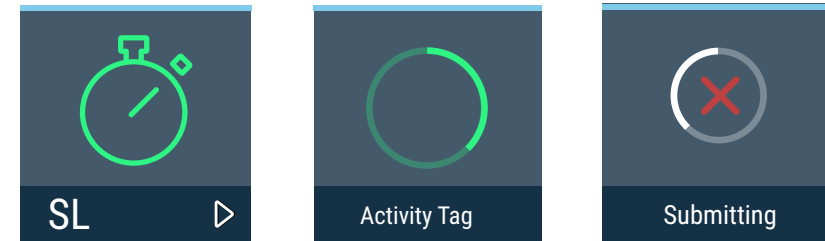
146 Fetching of building materials

147 Fetching of fodder

- 148 Sale and purchase related activities
- 149 Collection of other items
- 15 Processing and Storage
 - 152 Milling, husking, pounding
 - 153 Parboiling
 - 154 Sorting, grading
 - 155 Grinding, crusting
 - 156 Any other related activities
 - 157 Sale and purchase related activities



- Travel to the work
- 16 Mining quarrying, digging, cutting, etc.
 - 161 Mining/extraction of salt
 - 162 Mining / digging / quarrying of stone, slabs, breaking of stones for construction of building road, bridges, etc.
 - 163 Digging out clay, gravel and sand
 - 164 Digging out minerals – major and minor
 - 165 Transporting in vehicles
 - 166 Storing and stocking



- 167 Any other related activities
- 168 Sale and purchase related activities
- 169 Travel to the work

II Secondary Activities

21 Construction Activities

- 211 Building & construction of dwelling (laying bricks, plastering, thatching, bamboo work, roofing) and maintenance and repairing of dwelling.
- 212 Construction and repair of animal shed, shelter for poultry etc.
- 213 Construction of well, storage facilities, fencing, etc. for farms, irrigation work
- 214 Construction of public works / common infrastructure – roads, buildings, bridges, etc.
- 217 Any other activity related
- 218 Sale and purchase related activities
- 219 Travel to the work

22 Manufacturing Activities

221 Food processing and cooking for sale – making pickles, spices and other products; canning fruits, jams & jellies; banking; beverage preparation; selling readymade food, etc.

222 Butchering, curing, processing, drying, storing, etc. of meat, fish, etc.

223 Manufacturing of textiles – spinning, weaving, processing of textiles; knitting, sewing, garment making of cotton, wool and other materials

224 Making handicrafts, pottery, printing and other crafts made primarily with hands (wood based, leather based crafts, embroidery work, etc.)

225 Fitting, installing, tool setting, tool and machinery – moulding, welding, tool making

226 Assembling machines, equipment and other products

227 Production related work in large and small factories in different industries – as production workers, maintenance workers paid trainees and apprentices, sales administration and management activities

228 Sale and purchase activity

229 Travel for the work

III Trade, Business and Services

31 Trade and Business

311 Buying and selling goods – such as capital goods, intermediate goods, consumer durable, and consumer goods – in the organized and formal sectors.

312 Petty trading, street and door to door vending, hawking shoe cleaning, etc.

313 Transporting goods in trucks, tempos and motor vehicles

314 Transporting in hand carts, animal carts, cycle rickshaws, etc. or manually

315 Transport of passengers by motorized and non-motorized vehicles

32 Services

321 Services in government and semi-government organizations (salaried)

322 Services in private organizations (salaried)

323 Petty services: domestic servants, sweepers, washers, priest, cobbler, gardener, massaging, prostitution, (wages) watching and guarding

324 Professional services: medical and educational services (private tuition, non-formal teaching, etc.) financial services and management and technical consultancy services

325 Professional services: computer services, xerox/ photocopying services, beauty parlors, hair cutting saloons, etc.

326 Technical services: plumbing, electrical and electronic repair and maintenance and other related services

327 Others

328 Travel to work

IV Household maintenance, Management and shopping for own Household

A

411 Booking food items, beverages and serving

421 Cleaning and upkeep of dwelling and surroundings

422 Cleaning of utensils

431 Care of textiles: sorting, mending, washing, ironing and ordering clothes and linen

441 Shopping for goods and non-personal services; capital goods, household appliances, equipment, food and various household supplies

451 Household management: planning, supervising, paying bills, etc.

461 Do-it-yourself home improvements and maintenance, installation, servicing and repair of personal and household goods

471 Pet care

481 Travel related to household maintenance, management and shopping

491 Household maintenance, management and shopping not elsewhere classified

V Care for children, the sick, elderly and disabled for own household

B

511 Physical care of children: washing, dressing, feeding

521 Teaching, training and instruction of own children

531 Accompanying children to places: school, sports, lessons, etc. /PHC/doctor

541 Physical care of sick, disabled, elderly household members; washing, dressing, feeding, helping

551 Accompanying adults to receive personal care services such as hairdresser's therapy sessions, temple, religious places, etc.

561 Supervising children, needing care with or without other activity

562 Supervising adults, needing care with or without other activity

571 Travel related to care of children

572 Travel related to care of adults and others

581 Taking care of guests / visitors

591 Any other activity not mentioned above

VI Community services and Help to other Households

C

611 Community organized constructions and repairs; buildings, roads, dams, wells, ponds, etc. community assets

621 Community organized work: cooking for collective celebration, etc. 631 Volunteering with/for an organization (which does not involve working directly for individuals)

641 Volunteering work through organizations extended directly individuals and groups

651 Participation in meetings of local and informal groups / caste, tribes, professional associations, union, fraternal and political organizations

661 Involvement in civic and related responsibilities; voting, rallies, attending meetings, panchayat

671 Informal help to other households

681 Community services not elsewhere classified 691 Travel related to community services

VII Learning**D**

- 711 General education: school / university / other educational institutions attendance
- 721 Studies, homework and course review related to general education
- 731 Additional study, non-formal education under adult education programs
- 741 Non-formal education for children
- 751 Work – related training
- 761 Training under government program such as TRYSEM, DWCRA and others
- 771 Other training / education
- 781 Learning not elsewhere classified 791 Travel related to learning

VIII Social and Cultural Activities, Mass Media, etc.**E**

- 811 Participating in social events: wedding, funerals, births and other celebrations
- 812 Participating in religious activities: Church services, religious ceremonies, practices, kirtans, singing, etc.
- 813 Participating in community functions in music, dance, etc.
- 814 Socializing at home and outside the home
- 821 Arts, making music hobbies and related courses;

822 Indoor and outdoor sports participation and related courses

831 Games and other past-time activities

832 Spectator to sports, exhibitions / museums, cinemas / theatre / concerts and other performances and events

841 Other related activities

851 Reading other than newspaper and magazines

852 Watching televisions and video

853 Listening to music / radio

861 Accessing information by computing

862 Visiting library

863 Reading newspaper and magazine

871 Mass media use and entertainment not classified elsewhere

891 Travel related to social, cultural and recreational activities, social cultural and recreational activities not elsewhere classified, mass media use and entertainment

IX Personal Care and Self-Maintenance**F**

892 Travel related in search of job 911 Sleep and related activities

921 Eating and drinking

922 Smoking, drinking, alcohol and other intoxicants

- 931 Personal hygiene and health
- 932 Walking, exercise, running, jogging, yoga, etc
- 941 Receiving medical and personal care from professional
- 942 Receiving medical and personal care from household members
- 951 Talking, gossiping and quarrelling
- 961 Doing nothing, rest and relaxation
- 962 Forced leisure of forced rest & relaxation-willing and available for work
- 971 Individual religious practices and meditation
- 981 Other activities
- 982 Resting / convalescing due to physical illness and physical unwell persons
- 991 Travel related to personal care and self-maintenance

15. Appendix 2

U1, Female, age 52 - homemaker

Time	Activity	who did you do this for?	Parallel Activity	where were you	who was with you
6.40 am	woke up-good morning message to family	self	nil	home	family
till 7.15 am	brushing/yoilet etc				
7.30 am	making coffee	family	listening to devotional music in phone u tube	home	family
8.00 am	Bath			home	friends
9:00 AM	Gqanesha pooja	apartment	nil		
10:00 AM	prepared breakfast/tea	family	nil	home	family
10.15 am	ate breakfasr	self	watched TV	home	family
11 a,m	home cleaning	family	got work done from daily help	home	maid
11.15 am	soaked white clothes	family	nil	home	none
11.30 am	checked phone for whats app messages, FB on phone	self	nil	home	none
12.noon	programmed finalising & ticketbooking consulting	family	folding clothes	home	family
120.30 pm	put clothes for wash	family	folding clothes	home	family
1:00 PM	spoke to daughter	self	nil	home	none

1.30 pm	prepared lunch	family	spoke on phone	home	family
2.30 pm	had lunch	self	watched TV	home	family
2.45 pm	hanging clothes	family	nil	home	none
3:00 PM	went for Pooja	community	met friends	apartment	family
7.00pm	Visarjan and other temples	community	met friends	temples, river	family
7.30 pm	returned home and had dinner	self	news paper	home	family
9:00 PM	spoke to parents	self	nil	home	family
9.30 pm	watched TV	self	spoke to husband	home	family
10:00 PM	went to bed				

U2, Male, age 54 - banker

Time	What was your main activity?	who did you do this for?	what else were you doing at the same time	where were you	who was with you	problem faced		working day 12.9.2016
6.10 am woke up	saw baba picture in mobile. Lying in bed--browsed messages	self	thinking about office	home	wife	restless from the morning as I have to jot down meticulously		
6.30 am	Got up frm the bed. Looked through the window and saw temple tower and woshipped	family	nil	home	none			
	toilet							
6.45 am	saw messages in moobile	self	nil	home	none			

6.47 to 7.00 am	News paper glancing	self	drinking coffee	home	none			
7 am to 8 am	tuition--free classes	poor students	browsing messages in mobile	home	students			
8:00 AM	car papers checked, waste box kept outside. Flower purchased	family	telling slogam	home	wife			
8.20 am	clothes --applying soap	self	thinking about office	home	none			
8.30 am	mobile whats app message checking	to help students	nil	home	none			
8.35 am	bath	self	prayers	home	none			
8.45 am	checking mobile	self and students	nil	home	none			
8.50 am	prayer at Pooja room	family	nil	home	none			
9.00 am	flower market visit	family	thinking about office	market	none			
9.10 am	mobile whats app message checking	self	thinking about office	home	none			
9.15 am	breakfast	self	nothing	home	wife			
9.30am	to go office in auto	self and family	travelling	road	none			
9.40 am	office-notice board check	family	nil	office	none			
9.45 am to 11 am	session--at class	officers	fully involved in session	office	officers			

11.05 am	one visitor	official	discussion	office	visitor			
11.10 am	coffee break	self	discussing with team	office	team			
11.15 am to 12.30pm	session--at class	officers	fully involved in session	office	officers	could not carry the sheet to clas as it is difficult to write while handling class		
12.30 pm to 1.30 pm	meeting	team	discussion	office	team			
1.45	lunch							
2.15 pm	visit ATM	self	nil	office	none	could not carry the sheet to ATM as it is difficult to write while handling cash		
2.20 pm	working	officers	office	office	none			
2.50 p,	visitors	vistors	office	office	visitor	could not write immediately when the visitor was available		
3.00 pm	ticket agent --phone for ticket booking	self	nil	office	none			
3.00 pm	work--	officers	nil	office	none			
3.45 pm	tea break			office				
4.00pm	visitors	officers	nil	office	visitor			
4.20pm	call to GMs	office	nil	office	none			
till 5.30 pm	session--at class	officers	nil	office	participants	could not carry the sheet to clas as it is difficult to write while handling class		

6. pm	GM phone call	nil	nil	office	none			
6.10 pm	message from GM	nil	nil	office	none	could not jot down as talking to higher official		
6.45 pm	coffee break	self		shop				
7.30 pm	closing the work							
7.45 pm	left for home	self	walking	road	none			
8.00 pm	reached home							
8.30 pm	dinner	self	none	home	wife			
9 to 9.45	packing dress	self	talking to wife	home	wife			
9.45 to 10.30 pm	reading	self	none	home	none			
10.45 pm	sleep	self	nonr	home	none			
Time	What was your main activity?	who did you do this for?	what else were you doing at the same time	where were you	who was with you	problem faced	holiday	10.9.2016
6.00 am	got up. Telling a prayer. Seeing baba picture in mobile	family	nothing	home	none			
till 6.30 am	brushing/toilet							

6.30 am	coffee							
till 7.10 pm	morning walk	self	prayer	walking	none			
8.10 am	one hour tuition	poor students	nothing	home	students			
8.30 am	news paper reading	self	nothing	home	none			
8.30 am	Bath							
8.45 am	pooja at building--ganesha	family	prayer	building gr floor	friends	could not write as we were outside		
9.30 am	breakfast	self	full concentration on food	home	wife			
9.40 am	booked auto to go to central moffice	self	nothing	home	none			
till 10.30 am	mobile/ messages	self	nothing	home	none			
10.30 am	auto arrives			travel	none	could not write as we were outside		
1050 am	arrived at Central office							
11 am to 2 pm	centeneray year function live relay--watching	self	checking mobile often	central office	friends	could not write as we were outside		
2.20pm	retrurned back by auto							
2.30 pm	lunch							

2.20 pm	trying to call kumarasamy college of eng MBA dept people	college students		at home trying to call		tension as it was getting late to address the students and could not carry the sheet		
2.50 pm	trying to call kumarasamy college of eng MBA dept people	college students		building entrance		tension as it was getting late to address the students and could not carry the sheet		
3.00 pm	college car arrives							
3.45 pm	reached college							
till 5 pm	at college	college students	nothing	kumarasamy college	students	could not write as I was handling session		
5.15 pm	left college							
6:00 PM	arrived home							
6.15 pm	pooja gr floor building	self	nothing	home	friends	could not write as we were outside		
7:00 PM	returned back							
8:00 PM	mobile/ messages	self	nothing	home	none			
8.30 pm	watching TV	self	dinner	home	none	could not note down while eating		
9.00 pm	Sony TV dance programme	self	nothing	home	none			
9.30 pm	reading news paper	self	nothing	home	none			
9.30 pm to 10.30pm	arranging dress, almirah	self	thinking something	home	none			

U3, Female, Age 27 – Student

Day	Time	Activity	Parallel activity	Whom are you with	Where are you	Challenges
Saturday	8:45 AM	Woke up, brushed	Checked phone for messages	Self	Home	
		Roamed about the house	Checked Facebook	Self	Home	Had difficulty in remembering what time I got up
	9:15 AM	Started packing stuff for swimming	Thinking on what items are needed for packing	Self	Home	
		Packed food for library		Self	Home	
	9:45 AM	Washed utensils	Thinking how soon I can wash the utensils	Self	Home	
	10:00 AM	Skype with mother	Nothing	Virtually with mother	Home	
	10:30 AM	Started from home for swimming	Texted my friend to let her know I am going for swimming	Self	Home	
	10:45 AM	Swimming	Thinking how to finish 40 laps soon	Other swimmers	UIC Rec centre	
	11:30 AM	Shower, got ready for library	Texted friend to let her know I am done with swimming and would be in library soon	Self	UIC Rec centre	
	12:00 PM	Had breakfast	Talking to a friend coz I bumped into him	Friend	UIC student centre	
	12:30 PM	Studying in library	Checking phone for messages	2 friends	UIC library	
			Checking FB on laptop			
			Browsing other useless sites			
	5:30 PM	Went to AT&T store	Nothing	2 friends	AT&T store	
	6:00 PM	Went to Portillo to have chocolate cake shake	Grumbling about poor AT&T service	2 friends	Portillo	

	6:30 PM	Came back home to pack dinner	Checking phone messages and FB on phone	Self	Home	
	7:00 PM	Had tea	Packing dinner	Self	Home	Had difficulty in recalling what I was doing.
	7:30 PM	Went back to UIC student centre	Nothing	1 friend	UIC student centre	
	8:00 PM	Studying	Nothing	1 friend	UIC student centre	
	8:30 PM	Went for IGSA event	Maybe texting	lots of people	UIC student centre	Had difficulty recalling parallel activity
	9:00 PM	Had dinner	Watched performance at IGSA	lots of people	UIC student centre	
	9:30 PM	Came back to study	Discussing with friend	1 friend	UIC student centre	
			Social media, looking at job portals, texting			
	12:00 AM	Reached home	Nothing	1 friend	Home	
	12:30 AM	Watched random You tube videos	Texting Anjana	Virtually with Anjana	Home	
	1:00 AM	Sleep	Set alarm	Room mate	Home	
Wednesday	4:40 AM	Woke up, brushed, showered	Checked text message on phone	Self	Home	
	5:15 AM	Had breakfast	Checked an app called Purdue Career Fair on phone	Self	Home	
	5:35 AM	Started for Purdue in car	Checked route on Google Maps	1 friend	Taylor St in car	

	6:15	Picked up all friends and left from Chicago	Some other random googling on phone	3 friends	Car	
	6:45 AM	Travelling to Purdue, Lafayette	Listening to music in car			
			Small talk with the two new guys			
			Constantly looking up companies in the mobile app	3 friends	Car	
	9:00 AM	Reached Purdue, parked car	Cursing people to bring so many cars	3 friends	Purdue, Lafayette	
	9:30 AM	Refreshed	Nothing	3 friends	Purdue Memorial Hall	
	9:45 AM	Headed to career fair	Checking maps and companies on map	3 friends	Purdue Memorial Hall	
	10:15 AM	Interacting with company recruiters	Taking down notes	With recruiters	Purdue Memorial Hall	
			Handing over resume			
			Checking company details and map on phone			
	1:30 PM	Finished career fair	Calling up friends to meet at common point	3 friends	Purdue Memorial Hall	
	2:00 PM	Lunch	Checking maps on phone	3 friends	Papa Johns	
	2:30 PM	Back to fair	Checking maps on phone	3 friends	Purdue Memorial Hall	
	3:00 PM	Waiting for others	Reading up 2 computer programs on phone	Self	Bench	
	3:30 PM	Chatting with new guy	Thinking if he is Malayali or proper Tamil ;-)	With new guy	Bench	
	4:00 PM	Started for Chicago	Listening to music in car	3 friends	Car	
			Looking up computer programs on phone			

			Sleeping			
	6:30 PM	Reached Chicago	Nothing	Self	Home	
	7:00 PM	Ate snacks	Chatting with room mates	Room mates	Home	
	7:30 PM	Short nap	Checking phone	Room mates	Home	
	8:30 PM	Started for friends place	Called friend on phone	Self	Home	
	8:45 PM	Discussed code solutions	Browsing on laptop	With friend	Friend's place	
	11:30 PM	Gave coding test	Lot of browsing on laptop	With friend	Friends place	
	12:00 PM	Looked up another company's profile	Checked phone messages	Self	Home	
	12:30 PM	Filled out this sheet	Checked phone messages	Self	Home	

U4, Female 25, Designer (student)

Day	Time	Activity	Parallel activity	Whom are you with	Where are you
15-Sep		sleeping		No One	Room
15-Sep	8:30 AM	wake up, get ready	wake up others	No One	Hostel
15-Sep	9:00 AM	breakfast	nothing	No One/ People in mess	Mess
15-Sep	9:25 AM	Auto to class	talking	Dixa, Shreya	Road Insti
15-Sep	9:35 AM	Statistics class	class related stuff	Classmates	Sr IxD

15-Sep	10:53 AM	Tea Break	Discussing december plans :P	Shreya, More, Paul, Naz	Descafe
15-Sep	11:09 AM	Back to Class	Checking mail, whatsapp	Classmates	Sr lxD
15-Sep	12:30ish	Filling BMC Complaint	Eating Sweets, class timepass	Classmates	Sr lxD
15-Sep	~	Walk to Hostel	talking	IDC junta	Infi Corridor
15-Sep	1:00 PM	Lunch	talking	IDC junta	Mess
15-Sep	2ish	Talking	Cleaning room	Naz, Nulifer, Aunty etc	Room
15-Sep	2:45 PM	Instagram	Day Dreaming	no one	Room
15-Sep	3ish	Talking	nothing	Anjana, Chinmay	Room
15-Sep	3:20 PM	Instagram	Day Dreaming	no one	Room
15-Sep	3:40 PM	Mail, Medium etc	nothing	no one	Room
15-Sep	3:50 PM	Filling this form	nothing	no one	Room
15-Sep	3:56 PM	P2	insta	no one	Room
15-Sep	5:00 PM	Downloading Excel	Gup Shup	Anju, Chinmay	Anjana's Room
15-Sep	5:36 PM	Timepass	talking	Anju, Chinmay	Anjana's Room

15-Sep	6:06 PM	Clothes drying	nothing	no one	Laundry Room
15-Sep	6:19 PM	Tiffin	talking	Anju, Chinmay, Shreya	Mess
15-Sep	7:03 PM	Timepass	talking	Anjana, Naz	Room
15-Sep	~	went to maingate	walking	no one	Road Insti
15-Sep	7:30 PM	Leisure	talking, eating, hangouts	Mom (sometime with Anju, Naz)	Room
15-Sep	10:07 PM	Laptop Timepass	Youtube	Mom	Room
15-Sep	10:30 PM	P2 Reading	Music	Mom	Room
15-Sep	11:00 PM	Some work for Masosa	Music	Mom (is sleeping)	Room
15-Sep	11:35 PM	Call with Vipul	Standing in Anju's room, Walking around	Mom (is sleeping)	Room and Outside
15-Sep	11:57 PM	Some work for Masosa	Music	Mom (is sleeping)	Room
16-Sep	12:00 AM	Formatting this sheet	Music	Mom (is sleeping)	Room
16-Sep	12:04 AM	P2 Thinking	Music; Call+Whatsapp with More, Kovid, Vipul; eating; youtube	Mom (is sleeping)	Room
16-Sep	1:20 AM	Break	P2 discussion, Chinmay bashing :P	Anju, Naz, Nulifer	Naz's Room
16-Sep	2:25 AM	Brush	nothing	no one	Washroom

16-Sep	2:34 AM	Watching Suits	nothing	Mom (is sleeping)	Room
16-Sep	3:18 AM	sleeping	nothing	Mom (is sleeping)	Room

U5, Female, Age 24 – Designer (student)

Day	Time	Activity	Parallel activity	Whom are you with	
	12:01:30	working in studio	checking WA notif	alone	r ixd tudio
	1:30-2:00	walking back, preparing to sleep		alone	infi corridor, h10
	2:00-8:40	sleep	dreaming	alone	room
	8:40-8:55	getting ready for class	-	alone	room
	8:55-9:10	breakfat	-	friends	mess
	9:10-9:20	walking to class, settling down	-	friends	studio
	9:20-11:35	class	-	batchmates	studio
	11:35-12:10	tea break	checking WA notif	friends	descafe
	12:10-12:50	class	-	batchmates	studio
	12:50-1:05	walking back to hostel	checking WA notif	friends	infi corridor, h10
	1:05-2:00	lunch	talking to a friend	friends	mess
	2:00-2:15	checking mesages	-	alone	room
	2:15-5:30	sleep	dreaming	alone	room

5:30-5:50	tiffin	texting	alone	mess
5:50-6:15	waiting for friends and auto	checking notif	alone	outside h10
6:15-6:40	trip to kanjur and waiting for the train	-	friends	on the road, station
6:40-7:15	train journey to currey road	listening to music	friends	train
7:15-11:50	vising ganpati pandaals	eating	friends	laulbagh neighborhood
:50-12:30	train back to kanjur	listening to music	friends	train

U6, Female, age 25 – Designer(student)

Time	Activity	Parallel activity	Whom are you with	Where are you
6	Sleeping	nil	self	Home/Hostel
7	Sleeping	nil	self	Home/Hostel
8	Sleeping	nil	self	Home/Hostel
9	Sleeping	nil	self	Home/Hostel
10	Wake up,Brushing, eating - Personal care	Talking to people	Friends	Home/Hostel
11	Attending statistics class	Also doing project work	clasmates	IDC
12	Attending statistics class	Also doing project work, downloading Windows10	clasmates	IDC

U7, Male, age 24 – Designer(student)

Day	Time	Activity	Parallel activity	Whom are you with	Where are you	Difficulty
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Wed Sept 14 2016	545	woke up	checked messages, mails	self	Hostel Room	cant remeber exactly when I woke up, must be after 0545 and before 0600
	600	brushed	filled water bottles	self	hostel washroom	
	605	read through the scenarios prepared on previous night		self	Hostel Room (virtually dharavi)	
	645	listed out other scenarios that need to be prepared	read CMU articles on living city project	self	Hostel Room	time mentioned and taken for the task is approximated to nearest standard time and not precise
	715	read through the notes and the brainstorming for ideas	referred to the books for other ideas	self	Hostel Room	
	720	resumed working on the first scenario	dozed off in between for few min //cant remember when	self	Hostel Room(virtually dharavi)	
	830	got dressed	-	self	Hostel Room	
	835	ate breakfast	Tried out apps on phone	self	Mess	
	845	started walking towards IDC	Tried out apps on phone	self	Road from H13 to IDC	
	900	reached IDC, opened Sr IxD studio	-	self	Sr IxD, IDC	
	905	ate wada pav	fed Jadoo and played with him	jadoo	Descafe	
	910	resumed working on the first scenario	sorted out points for other scenarios	self	Sr IxD, IDC	
			listening to youtube mix	self	Sr IxD, IDC	
			Prepared points for meeting with AJ and Matt Jones	self	Sr IxD, IDC	
	945	wished abhijith onashamsakal.	learned how to say those words in one go	abhijith	Sr IxD, IDC	

	100 0	discussed few points about previous lecture of Indian Thoughts	cracked few bad jokes about the assignment	self, abhijith	Sr IxD, IDC	
	104 5	talked with herold and paul about onam celebrations, p2 and scenarios		Herold, Paul, Abhijith	Sr IxD, IDC	
	110 0	opened up auditorium for the ITnT lecture	talked with Mansi and Udayan about TA	Mansi, Udyan	Auditorium, IDC	
			Thought about completing TA work	self	Auditorium, IDC	
	111 5	Discussed few points about the due assignment for ITnT	Random discussions with other people	classmates	Auditorium, IDC	
			Opening articles to be read while getting bored in the lecture	self	Auditorium, IDC	
			wished random mallu junta and others happy onam	random idc junta	Auditorium, IDC	
	113 0	listening to the lecture	Reading articles	self, classmates and professor	Auditorium, IDC	
			went through keep notes and noted down important points in diary	self	Auditorium, IDC	
	124 5	placement meeting/discussion	parallel talks about same topic with paul and akvil	self, placement committee, akvil, paul and other classmates	Auditorium, IDC	
			whatsapped priyanka out the texas instruments offer		Auditorium, IDC	
	132 0	Placement discussion with Sachit	locked auditorium and returned keys at security desk	sachit	Stairs, IDC	
			marked attendance	sachit, self	IDC Office	

			discussion with watchman	watchman	security desk	
	132 5	Lunch	discussion about P2 scenarios	self, abhijith	Descafe	
	134 5	discribed first scenario	discussed other ideas that could be incorporated	self, abhijith	Sr lxD, IDC	
	143 0	sketching out scenario keyframes	discssion about the scenarios	self, abhijith	Sr lxD, IDC	
	153 0	went through the points agian forr meeting with AJ	waiting for AJ's call for meeting	self, abhijith	Sr lxD, IDC	
	153 5	slept	waiting for AJ's call for meeting	self	Sr lxD, IDC	
	162 0	woke up and started working on 2nd and 3rd scenario	thinking how bad it would be to miss the meeting	self	Sr lxD, IDC	
	165 0	created rough structure for 2nd and 3rd scenario	listed out few new ideas that could be used for dashboard	self	Sr lxD, IDC	
	173 0	tried out apps for anjana's p2	installed few new apps to try out later	self	Sr lxD, IDC	
			recorded important screenshots	self	Sr lxD, IDC	
	175 0	tried several calls to gnana,	talking with abhijith about contrast ratios	self, abhijith	Sr lxD, IDC	cant remember the phone calls, their timings though the discussions faintly could be remembered
	181 5	Read articles onupdated andriod accessibility guidelines		self	Sr lxD, IDC	
	183 0	ate few biscuits		self, abhijith	Sr lxD, IDC	
	191 5	read about amsterdam project		self	Sr lxD, IDC	

	1930	discussion with gnana about scenario	call with anjana about snapdeal delievery	gnana, anjana	Sr IxD, IDC	
	2030	called more for dinner			Echo Point	
	2035	walked to h13	discussion about p2 and DRS	akvil	Road to IDC	
	2045	dinner	discussion about random shit	nishith, akvil	Mess	
	2100	walked to idc	discussion about p2	akvil	Road to IDC	
	2115	walked to h10	played with puppies in LHC	self	LHC	
			called anjana to come down	anjana	Infy Corridor	
	2130	handed over the snapdeal parcel	random discussions	Anjana	H10	
			talked with parents	Parents	H10	
	2145	walked back to idc	tried out few more apps	self	IDC, infy corridor	
	2200	enquired about cintiq		Rajkumar, Prakash	Sr mobility, IDC	
	2215	Resumed working on Scenarios	random discussion about akvil's p2	self, akvil	Sr IxD, IDC	
	2230	Video tutorial on Nearby API	replied to whatsapp messages	self	Sr IxD, IDC	
	2330	articles about nearby API	random discussion about akvil's p2	self, akvil	Sr IxD, IDC	
	2345	marked reference points on ReDharavi	Talking with Nazreen	self, Nazreen	Sr IxD, IDC	

			Tried out cardboard camera app	self	Sr IxD, IDC	
	0	celebrated Mansi's Bday		IDC junta	Design Circle	
	20	walking back to h13	trying out new apps	self	road	
	40	played with dog in h13		self, dog	h13 ground floor	
	50	entered hostel room		self	Hostel Room	
	55	changed clothes,	opened laptop and put it on charge	self	Hostel Room	
			resumed working on scenarios	self	Hostel Room	
	130	tried installing drivers for bamboo pad	watched scishow vids on youtube	self	Hostel Room	
	200	slept	set alarms for 830	self	Hostel Room	
			planning for the rest pf the scenarios	self	Hostel Room	
			forgot to put phone on charge	self	Hostel Room	

U8, Female, age 26 - Designer

Day	Time	Activity	Parallel activity	Whom are you with	Where are you	Difficulty
Wednesday - 14/09/2016	8:00 AM	Woke up	Whatsapp	Self	Room	Unable to recall exactly when I woke up
ONAM - atypical	8:15 AM	Washroom, Brushing	-	Self	Bathroom	
	8:30 AM	Bath		Self	Bathroom	
	8:50 AM	Drying Clothes	Chat with Saloni	Self	Laundry room	

	8:55 AM	Dressing up	Talking to Ragini	Self	Corridor	
	9:00 AM	Wearing lens	-	Self	Room	
	9:20 AM	Looking for purse	Talking to Chandni	Self	Room	Approximated
	9:30 AM	Breakfast	-	Friends	Mess	Not sure
	10:05 AM	Walking to Temple	Checking phone	Self	Insti main road, outside	
		Praying	-	Self (People at the temple)	Temple	Do not remember time
	10:20 AM	Asked the tum tum timings	Checking phone	Tum tum drivers	Main gate	
	10:25 AM	Walking to Hostel	Talkin on phone with family	Self		
	10:30 AM	Random talking	-	Nazreen	Nazreen's room	Remember this
	10:35 AM	Talking	-	Saloni	Corridor	
	10:40 AM	Combing hair	-	Self	Corridor	
	10:55 AM	Helping chandni	-	Chandni, Saloni	Chandni's room	
	11:00 AM	Walking around	Calling people for class	Self	Corridor	
	11:05 AM	Took an auto	Talking	Shefali, Saloni	Auto	
	11:10 AM	Discuss with team	Texting	Classmates	Audi	
	12:45 PM	Remind sir of time	-	Classmates	Audi	
	1:05 PM	Meeting	Texting	Classmates	Audi	Approximation
	1:55 PM	Walking	Talking, Called nazreen	Saloni	Corridor	
	2:10 PM	Eating Lunch	-	Saloni	Mess	

	2:40 PM	Changed clothes	-	Self	Room	
	2:50 PM	Drawing	Texting Saloni	Self	Room	Approx
	3:05 PM	Got Tripod	Texting Saloni	Self	Ragini room	
	3:10 PM	Ajinkya call	Texting Saloni	Self	Room	
	3:30 PM	Packing up	-	Saloni, Shreya	Room, corridor	Do not remember where, multiple locations
	4:15 PM	Data collection	Listening to radio	Saloni, Shreya (and many known and unknown people)	Foot over bridge	
	6:30 PM	Eat snacks	Talking	Saloni, Shreya	Chat Shop	
		Drawing	Call with Chinu	Self	Room	

U9, Male, age 58 – Retired Marketer

Day	Time	Activity	Parallel activity	Whom are you with	Where are you
Thursday	07.00 - 08.00	Morning Chores	Listening to devotional music	Family	Home
	08.00 - 09.00	Watching TV	Traditional Medicine on TV	Family	Home
	09.00 - 09.30	Watching TV	Checking Whatapp & Text Msg	Family	Home
	09.30 - 10.00	Stocks Trading	Keeping a tab on News	alone	Home

	10.00 - 11.00	Stocks Trading	Review the trading position	alone	Home
	11.00 - 13.30	Stocks Trading	Keeping a tab on News	alone	Home
	13.30 - 14.00	LUNCH	keeping a tab on News	Family	Home
	14.00 - 15.30	Stocks Trading	keeping a tab on News	alone	Home
	15.30 - 16.00	Check Mails	Send messages	alone	Home
	16.00- 17.00	REST	Catch up on a little reading	alone	Home
	17.00 - 19.30	Shopping for needs	Travel into the town	alone	Outdoors
	19.30 - 20.30	Dinner	Listen to Music/News	Family	Home
	20.30 - 23.00	Watching TV	Reading/Listening to Music	Family	Home
	23.00 - 24.00	Go to bed	Read a little before sleeping	alone	Home

U11, Female, age 24 - marketer

Timings	Main Activity	Who did you do it for	What else were you doing	Where were you	Who was with you	Difficulty
700-800	Yoga & Walking	Self	Nothing	Yoga Room	No one	Forgot to add it at that time since I am not habituated to it

900-1000	Breakfast	Mom	Watching TV	Dining Room	Family	
1100-1300	Watching Movie					
545-630	Yoga	Self		Yoga room	No one	
700-730	Got Ready for work	Office	completing office work	home	no one	
800-900	Going to work	Office	Listening to music	Car	My neighbour	
900-900	Office	Client	Listening to music, Taking breaks	Office Building	Colleagues	

