



KLE Technological
University
Creating Value
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**Department of
Automation and Robotics**

Subject Code: 17EARW301

**Mini project report on
EMERGENCY ALERT SYSTEM**

by

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CERTIFICATE

This is to certify that the project entitled “**Emergency Alert System**” is carried out by the below-mentioned student as part of the course MINI PROJECT (17EARW301), studying at KLE Technological University, Hubballi, during 5th Semester of the B.E program for the academic year 2019-20.

The project report fulfils the requirements prescribed.

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Prof. Sachin Karadgi, Associate Prof.
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Acknowledgement

An undertaking of work life - this is never an outcome of a single person, rather it bears the imprints of a number of people who directly or indirectly helped me in completing the course.

First of all, I am extremely grateful to **Prof. A C Giriapur, Head of Dept. Automation and Robotics** for his guidance, encouragement and tutelage during the course of the mini project despite his extremely busy schedule. My very special thanks to him for giving me the opportunity to do this project and for his support throughout as a mentor.

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ABSTRACT

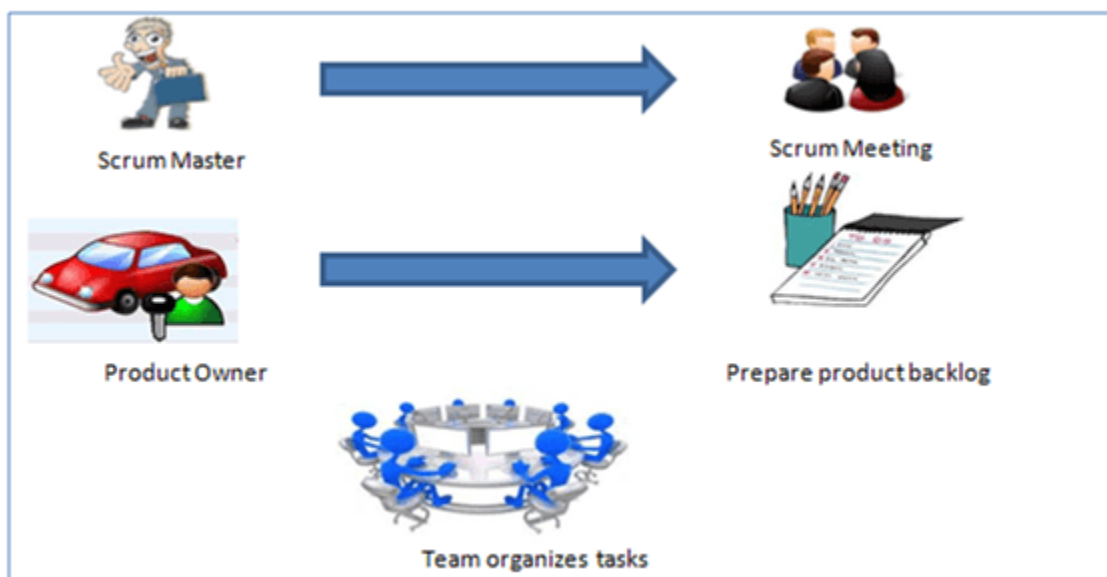
The mini project course offered choices two themes "world Ageing problem " and advanced personalised learning ". Our team chose the first one, the purpose of our product is to ensure safety in old age people so that they are not completely dependent on others. A system of biological or technical nature deployed by an individual or group to inform of a future danger. Its purpose is to enable the deployer of the warning system to prepare for the danger and act accordingly to mitigate or avoid it. We are all familiar with the national public warning system called the Emergency Alert System (EAS). We hear the monthly test ringing from our televisions and radios, but here are a few things you may not know about the EAS.

The purpose of the system is not simply to provide the public with emergency information. The Federal Communications Commission requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service providers, and direct broadcast satellite providers to provide the President with communication capability during a national emergency. The President, in essence, receives top priority across all modes of communication so his lines are clear, available, and uninterrupted during a national crisis. We are all familiar with the national public warning system called the Emergency Alert System (EAS). We hear the monthly test ringing from our televisions and radios, but here are a few things you may not know about the EAS. The purpose of the system is not simply to provide the public with emergency information. The Federal Communications Commission requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service providers, and direct broadcast satellite providers to provide the President with communication capability during a national emergency. The President, in essence, receives top priority across all modes of communication so his lines are clear, available, and uninterrupted during a national crisis.

These modes of communication have changed over time and include newer technologies the government is building into their emergency plan. An executive order was issued by President Barack Obama in 2012 to assign National Security and Emergency Preparedness (NS/EP) communications functions. The order stipulates that the Secretary of Homeland Security will oversee the organization and management structure for NS/EP communications functions and these would include, among other things, the "Next Generation Network Priority" program. This program enables users, the President being at the top, to have priority voice, data, and video communications "as the communications networks evolve." We here as a team of four develop the prototype with the same inspiration as above.

INTRODUCTION

In this mini project course, we are going to analyse the flow of our course project, the work completed by our team and various other descriptions about each and every template of the Agile methodology. This report will make you understand the process or flow of all the templates and charts. AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. SCRUM is an agile development method which concentrates specifically on how to manage tasks within a team-based development environment. Basically, Scrum is derived from activity that occurs during a rugby match. Scrum believes in empowering the development team and advocates working in small teams (say- 7 to 9 members). It consists of three roles, and their responsibilities are explained as follows:



- Scrum Master is responsible for setting up the team, sprint meeting and removes obstacles to progress.
- The Product Owner creates product backlog, prioritizes the backlog and is responsible for the delivery of the functionality at each iteration.
- Scrum team manages its own work and organizes the work to complete the sprint or cycle

BRAIN STORMING QUESTIONS

The brain storming questions are formed collectively by the team members, combining the important questions from each member of the team.

1. Can we make them self-employed?
2. Does technology change the perspective of experiencing life?
3. How can technology solve the problem of isolation for the elderly?
4. How can the aged group be made productive?
5. How can they be engaged in their work even after retirement?
6. How can we assure them about the advantages of technology?
7. How can we bring improvements in their health and mental issues?
8. How can we encourage them to adopt a healthy lifestyle and stay active?
9. How can we engage activities for the elderly, which are not physically tiring?
10. How can we ensure financial security?
11. How can we ensure the reliability?
12. How can we ensure them about the advantages of the product provided?
13. How can we gain their trust on our work?
14. How can we improve the mental health of elderly?
15. How can we improve the quality of life of elder people in middle class families?
16. How can we make a product which is cost effective?
17. How can we make health care less expensive for them?
18. How can we make the elder people more concentrate on to the co-circular activities and social works?
19. How can we make the transportation facility easily?
20. How can we make them self-sufficient?
21. How can we make use of the existing equipment/techniques? or is there a need for developing new ones?
22. How can we provide knowledge about the new technologies which is increasing day by day?
23. How can we solve old age mental health problems like Alzheimer's?
24. How can we solve problem of isolation and mental health?
25. How can we use the wisdom and experience of the elderly?
26. How can we use their life experiences to build a beautiful society?
27. How can we utilize the vast pool of knowledge and experience of retire elder people?
28. How many people are actually interested in working after the age of 65, if an idea is pitched for making jobs for them?
29. How to overcome the generation gap?
30. How will it help in avoiding their isolation & provide them emotional help?
31. Is this cost efficient? Other device (in case we use it as a solution)?
32. To whom is this beneficial?
33. What are the available products and alternatives to develop it?

34. What are the existing solutions for this problem?
35. What are the main sub problems of the aging world problem we aim to solve?
36. What are the ways that get them connected to the society?
37. What are the ways to provide them support and balance with safety?
38. What are their problems and social issues?
39. What can be done to increase their bone strength and mobility?
40. What is the average age of a person who is physically capable of working?
41. What is the percentage of the people being affected by world ageing population?
42. What kind of jobs are they really interested in?
43. What measures can be taken to prolong their utility?
44. What percentage of old aged people are willing to learn how to interact with a tablet/
any?
45. What product can be used to implement this?
46. Where can we bring the changes in Engineering products and their infrastructure?
47. Who are the beneficiaries of this project?
48. Who is going to be benefited from this?
49. Why is this situation has arisen?
50. Will technology be able to solve this problem?

FOCUS GROUP

The focus group survey we undertook by conducting small questionnaire to the geriatrics. Based on the survey we could analyze the gain pain values faced by geriatrics.

What is your Name?
H. D. Gahuley

How many members are there in your family?
2 (Specify if joint family).

What is your age?
☐ 50-52 ☐ 53-56 ☒ 57-60

Are you working currently?
Yes ☒ No

How long do you work?
☒ 4 hrs. ☐ 5 hrs. ☐ 6 hrs. ☐ 8 hrs.

What is the thing that you like doing the most but you aren't able to do it due health issues or any other factors?

If you had one wish to make, what would you have wished for?
Be able to solve the environmental pollution problem

Have you noticed any problems in the society that you would like to solve or might have feel we could solve?
the Lack of respect towards environment & conservation of natural resources for sustainability

Below are the questions based on the activities of daily living, physical functioning and psychological distress, we would like you to answer fairly in order to understand, if the need identified by us is correct and can also be a problem in the future.

Please tick the choices given below that you might feel is true for you.

- In general, would you say your health is?
☐ Excellent ☐ Very good ☒ Good
☐ Fair ☐ Poor ☐ don't know
- Compared with five years ago, how would you rate your health in general: better now, about the same or worse now?
☐ Better now ☒ about the same
☐ Worse now ☐ Refuse.

- In the last 12 months, have you spent more than a complete week in bed at home because of illness or accident? (Prompt for reason illness or accident)

☒ Yes, illness ☐ Yes, accident
☐ Yes, both ☒ No

- Can you do home maintenance or gardening tasks on your own?

☒ Yes ☐ No
☐ Don't know ☐ Refused.

- Do you need help or supervision with personal care such as showering or bathing, dressing, or getting to the toilet?

☐ Yes ☒ No
☐ Don't know ☐ Refused.

- Do you need help cutting your toenails?

☐ Yes ☒ No
☐ Don't know ☐ Refuse

- Can you do household duties like laundry, vacuuming, or dusting on your own?

☒ Yes ☐ No
☐ Don't know ☐ Refused.

- Can you prepare all your meals on your own?

☒ Yes ☐ No
☐ Don't know ☐ Refused.

- Would you say that the way you live your life these days is:

☐ Very healthy ☒ fairly healthy ☐ Not so healthy

- In the last 4 weeks, about how often did you feel so sad that nothing could cheer you up?

☐ Most of the time ☐ some of the time ☒ A little of the time ☐ none of the time

- What are the two most important things you do to keep you healthy or improve your health?

☐ Walking ☐ Other physical activity ☐ Healthy eating ☐ Social activity
☒ Positive attitudes ☐ Healthy living habits ☐ other (specify)

- Have you ever experienced this situation where, you go for your morning walk and suddenly got lost and you have trouble remembering the directions?

QUESTIONS FROM K I F Task 4

Yes ☒ No

Do you use any of the given below.

A hand support stick ☐ a walker ☐ a wheelchair

Do you find trouble using any of the above support devices?

Yes ☐

No. I am comfortable using it. ☐

☒ No, I don't use any
☒ This question doesn't apply to me

If you want to travel to a place, do you like to go alone or do you need someone by your side?

☒ Yes, I like to travel alone and I am comfortable with i.e. like to travel alone but I have few factors, that doesn't let me do it.

☐ No, I need someone by my side to look after me.

☐ I can't travel alone but I also don't like someone coming with me to look after me.

Please tick correct option below

☐ I seldom forget a thing.

☒ I forget some things but I am good in remembering directions.

☐ I have trouble remembering things and I often forget directions to a specific place.

What is the thing that you like doing the most but you aren't able to do it due health issues or any other factors?

If you had one wish to make, what would you have wished for?

Have you noticed any problems in the society that you would like to solve or might have feel we could solve?

Write down a few advice that you would like to give today's youngsters?

Respect and utilise the experience and wisdom of the elders

Apply our ancient astrological science in taking decisions about

Are there any doings you have done, about which you would like to warn us about the career & personal life consequences? (This question is optional, we understand if you are not comfortable answering this question)

None

- What are your goals for life?

To help younger generation should not lose their focus on life

- Do you feel insecure when you are alone? Please describe the situation and give reasons.

No

- What would you do after you retirement?

Mentor the youngsters

- What all precautions you take when you are alone?

None specific

- Do you feel modern technology complicated?

Sometimes

- What do you do in your leisure time? List them.

1. Tweet regarding national security issues
2. Keep updated about national politics

Conclusion:-

After the survey, we found that he is an active person who is alert and attentive about global issues. Some of his ideas are innovative and creative. He is keen into helping the younger generation to focus on life. His major focus is on environmental issues. His ideas and wisdom serves as a great help to us.

We have marked down a few problems that we may be able to solve. Do you think these may be the problems even you might be faced but you? Please feel free to share any suggestions or measures that may help us.

- 1) Mr. Suhas.T, 68 year old man needs away to monitor his wife who is Alone at home in order to ensure her safety. But (1) she has lost her reflexes due to which in case of emergency she cannot respond immediately. (2) His busy schedule keeps him away.
- 2) Mr. Prakash, 82 year old man needs a way to support him for walking in order to enjoy his morning walks with his friends but his hands are not strong enough to hold a stick and walk.
- 3) Mrs. Shaila M, a homemaker needs a way to go out by herself so that he can interact with neighbours but she had a back bone surgery which has made her no (her to sit in one place) or her to stay in home at one place.
- 4) Mrs. Gayatri, a homemaker needs a way to get live updates of location of her husband who often forgets the direction when he goes for a walk. But he wishes to go on a walk alone as he wants to spend time with himself.

Below is the text box for you to provide us your opinion on these problems. Please Feel free to share any other problems you feel needs to be addressed.

1. Can take help from an App
2. Suitable self operated wheelchair can be fabricated with all necessary features
3. Househelp can be hired along with appropriate technology
4. Can have a companion Robot.

USER PERSONA

The below templates are the user personas which describes every detail about them, we interviewed few old age people.

Persona 1		Persona 2	
Date of birth	: 16 August 1948	Date of birth	: 28 March 1945
Age	: 71 years	Age	: 75 years
Gender	: Female	Gender	: Female
Social Class	: Middle class	Social Class	: Upper middle
Name: Padmavati R		Name: Shaila M	
Occupation	: Homemaker	Occupation	: Homemaker
Lifestyle	: Disciplined, cultured and organized life, her daily routine starts with looking after her Household chores.	Lifestyle	: Disciplined, cultured, organized life before she used to interact with many people and attend many gatherings.
Personality	: Tall and slightly muscular	Personality	: Short, fragile and thin.
Behavior	: Calm and kind-hearted, greets people whole - heartedly, enthusiastic and euphoric always	Behavior	: Sometimes rude, aggressive and angry when plans don't follow according to her.
Goal	: The moto of her life is to spend happy life with Her husband, children and grandchildren.	Goal	: The moto of her life is to spend a happy life and meeting new friends and living a healthy life.
Need	: The need for her is that a way to get live updates of location of her husband who often forgets the direction when he is out for a walk but he wants to spend quality time alone without any company.	Need	: The need of her is a way to go out by herself so that she can interact with her neighbors and have quality time with them, but when she had backbone surgery she has been restricted for her above wish.


MARKET SEGMENTATION

The market segmentation of the old people category we divided based on the results of team survey, focus group survey.

Product Idea	Segmentation	Target	Positioning
Behind-the-ear Aids Receiver-in-the-Ear Aids In-the? Ear Aids Bone Anchored Hearing Aids Canal Hearing Aids Cochlear Implants	Living Aids Devices Hearing Aids	65+ All classes Living in Dharwad district, Karnataka, India	Cost effective Ergonomic Adjustable Wide range Zero maintenance Long life
Braille Translators Video Magnifiers Reading Machines	Living Aids Devices Reading and Vision Aids	65+ All classes Living in Dharwad district, Karnataka, India	
Manual Wheelchairs Powered Wheelchairs	Mobility Aids Devices Wheelchairs		
Walkers & Rollators Canes & Walking Sticks Crutches Transfer Lifts or Patient Mechanical Lift Handling Door Openers	Mobility Aids Devices Mobility Scooters		
	Medical Furniture Medical Beds Door Openers Medical Furniture Accessories Riser Reclining Chairs		
	Bathroom Safety Equipment Shower Chairs Commodes Ostomy Products Bars, Grips, & Rails		

TEAM PERSONAS

The below templates are the personas of each team member.

	Your name: Chinmaya Sabnis
	USN: 01FE17BAR013
<p>What are your personal goals for mini project (e.g. I would like to learn...? I would like to try....)</p> <ul style="list-style-type: none">• I would like to learn systematic way of building a project• I would like to involve myself totally into the project and give my 100% efforts.• I would like know how to design a product which is simple yet useful.• I want to get every possible knowledge that would help me in the future from this mini project.• I want to learn more about myself how do I work under stress, when am I most productive.• I want to know in which area do I fit more, in designing or managing, etc.	
<p>Share a thought, something your excited about something you concerned about</p> <ul style="list-style-type: none">• I am excited about getting to know my team mates.• I am excited about building something innovative and useful.• I am excited about learning new things.• I am excited about meeting new people and getting to know them.	



Your name: N Anjana

USN: 01FE17BAR029

What are your personal goals for mini project (e.g. I would like to learn...? I would like to try....)

- I would like to learn systematic way of building a project
- I would like to involve myself totally into the project and give my 100% efforts.
- I would like know how to design a product which is simple yet useful.
- I want to get every possible knowledge that would help me in the future from this mini project.
- I want to learn more about myself how do I work under stress, when am I most productive.
- I want to know in which area do I fit more, in designing or managing, etc.

Share a thought, something your excited about something you concerned about

- I am excited about getting to know my team mates.
- I am excited about building something innovative and useful.
- I am excited about learning new things.
- I am excited about meeting new people and getting to know them.



Your name: Samruddhi Parwapur

USN: 01FE17BAR051

What are your personal goals for mini project (e.g. I would like to learn...? I would like to try....)

- I would like to learn systematic way of building a project
- I would like to involve myself totally into the project and give my 100% efforts.
- I would like know how to design a product which is simple yet useful.
- I want to get every possible knowledge that would help me in the future from this mini project.
- I want to learn more about myself how do I work under stress, when am I most productive.
- I want to know in which area do I fit more, in designing or managing, etc.

Share a thought, something your excited about something you concerned about

- I am excited about getting to know my team mates.
- I am excited about building something innovative and useful.
- I am excited about learning new things.
- I am excited about meeting new people and getting to know them.



Your name: Sushma R Hiremath

USN: 01FE17BAR057

What are your personal goals for mini project (e.g. I would like to learn...? I would like to try....)

- I would like to learn systematic way of building a project
- I would like to involve myself totally into the project and give my 100% efforts.
- I would like know how to design a product which is simple yet useful.
- I want to get every possible knowledge that would help me in the future from this mini project.
- I want to learn more about myself how do I work under stress, when am I most productive.
- I want to know in which area do I fit more, in designing or managing, etc.

Share a thought, something your excited about something you concerned about

- I am excited about getting to know my team mates.
- I am excited about building something innovative and useful.
- I am excited about learning new things.
- I am excited about meeting new people and getting to know them.

TEAM LAUNCH

The team launch worksheet consists each individual persona, the do's and don'ts, the combined team goals and experience insights from previous projects.

TEAM LAUNCH

TEAM-0

WORKSHEET

HEY THERE !!
I AM THE CAPTAIN OF THIS SCRUM TEAM...

NAME: N. ANZANA
JOIN: CITELEBARON

GOALS FOR THIS PROJECT:

1. To provide the many team members
2. To ensure the team is well organized

SOMETHING I AM EXCITED OR CONCERNED ABOUT:

1. I am excited about the technology and the way it is being used
2. I am excited about the way of working and the way it is being used

HEY THERE !!
I AM THE CHIEF ENGINEER OF THIS SCRUM TEAM

NAME: CHENMANN, SHANES
JOIN: CITELEBARON

GOALS FOR THIS PROJECT:

1. To provide the many team members
2. To ensure the team is well organized

SOMETHING I AM EXCITED OR CONCERNED ABOUT:

1. I am excited about the technology and the way it is being used
2. I am excited about the way of working and the way it is being used

NORMS OF COLLABORATION

DON'TS

1. Not to discourage individuals
2. Not to consider any input as silly
3. No negligence towards deadlines

DO'S

1. To know individual roles and act according to it
2. To keep the track of completing the tasks
3. To keep documentation of every step in the process
4. To respect each individual's opinion and ideas

HELLO GUYS !!
I AM THE SPOKESPERSON OF THIS SCRUM TEAM.

NAME: SHANMUGH, S. R.
JOIN: CITELEBARON

GOALS FOR THIS PROJECT:

1. To design a product that is useful to the customer
2. To ensure the satisfaction of the customer
3. To ensure the team is well organized

SOMETHING I AM EXCITED OR CONCERNED ABOUT:

1. I am excited about the technology and the way it is being used
2. I am excited about the way of working and the way it is being used

HELLO PEOPLE !!
I AM THE HR OF THIS SCRUM TEAM.

NAME: SHANMUGH, S. R.
JOIN: CITELEBARON

GOALS FOR THIS PROJECT:

1. To design a product that is useful to the customer
2. To ensure the satisfaction of the customer
3. To ensure the team is well organized

SOMETHING I AM EXCITED OR CONCERNED ABOUT:

1. I am excited about the technology and the way it is being used
2. I am excited about the way of working and the way it is being used

TEAM GOALS:

1. To identify as many problems as possible.
2. To come up with a working or effective solution.
3. To come up with good features for the product.
4. To make a proper sprint planning.

EXPERIENCE

INSIGHTS

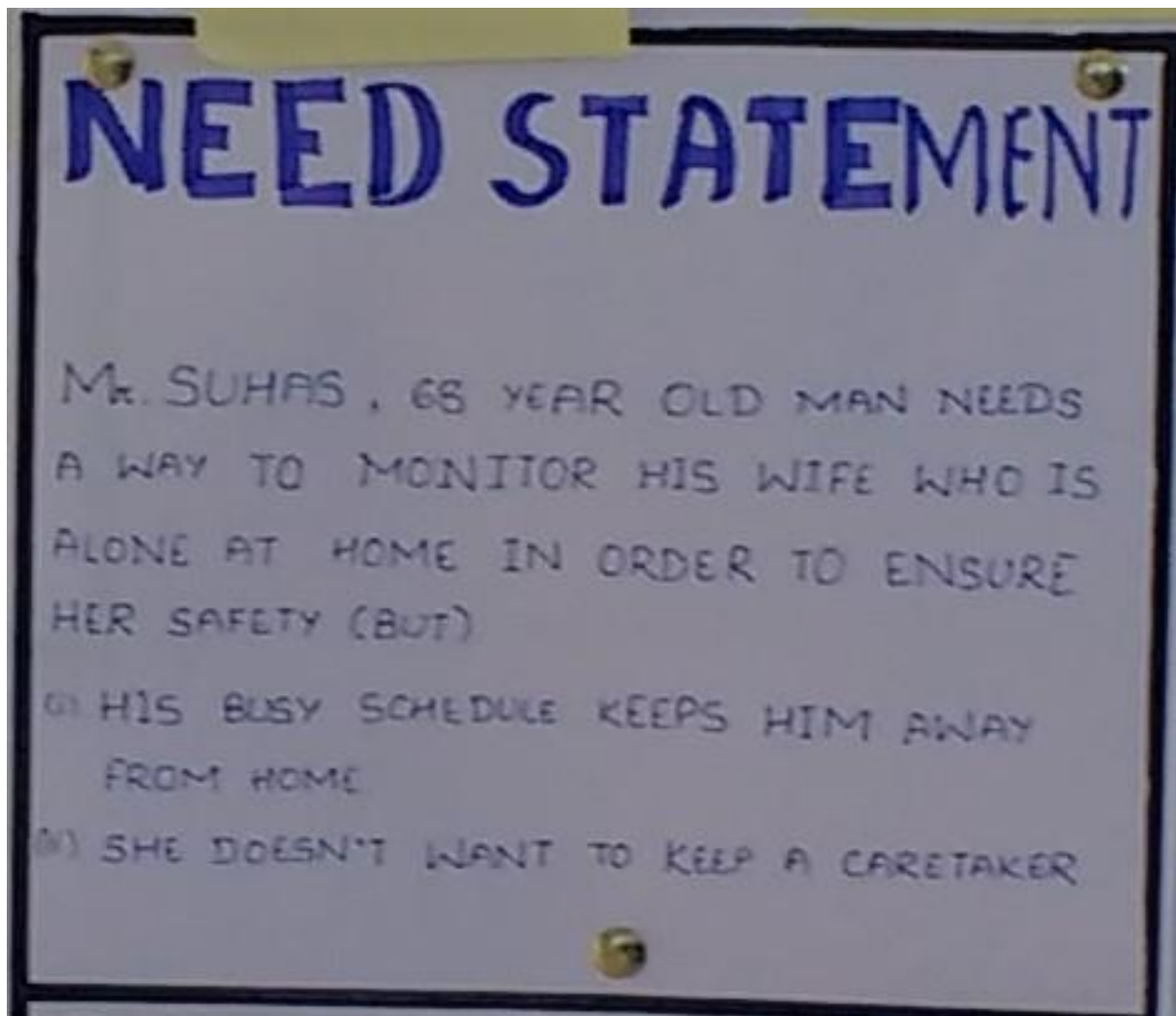
1. To be patient and think about big picture
2. To play the cards of the Captain
3. To motivate each other
4. Not to hesitate from asking doubts

NEED STATEMENT

We formulated the need statement based on the market segmentation, team survey, focus group survey.

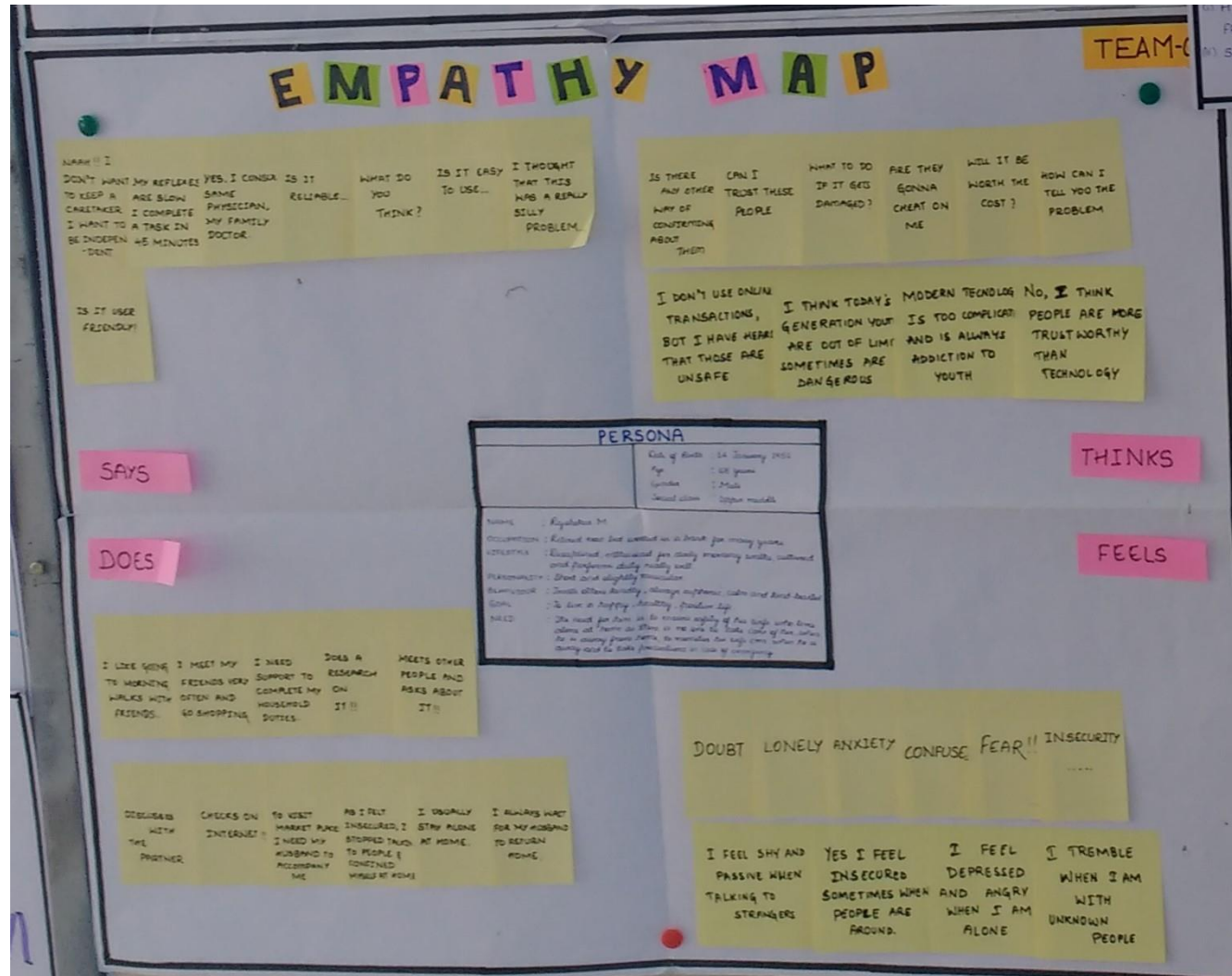
Mr. Suhas, 68-year-old man needs a way to monitor his wife who is alone at home in order to ensure her safety but,

- His busy schedule keeps him away from home.
- She doesn't want to keep a caretaker.



EMPATHY MAP

An empathy map is a collaborative tool we have used to gain a deeper insight about our customers.



USER STORIES

A **user story** is a tool used in Agile method to capture a description of a customer insight (old age people) from an end-user perspective.

USER STORIES
TEAM-01

As a businessman, I want something alternative other than castakes, so that I can save some money.

As an old man, I want something which is under my budget, so that I can afford it.

(1) As a weak woman I want something which is light weight so that I can carry it around.

As a businessman, I want a quality product so that I can ensure its reliability.

As a businessman, I want to use a durable product so that I can be least fix and can relay on it.

As an old woman, I want something alternative other than castakes, so that I can save money.

As an old woman having limited knowledge of smart phone I want to alert my neighbours if I get into my drug medical emergency.

As a businessman, I want to use a product which is attractive and colourful so that I can carry around.

As an illiterate, I need something which doesn't require basic language skills so that I can use it efficiently.

As a old man I want something to help me in remembering directions so that I can go to stores alone.

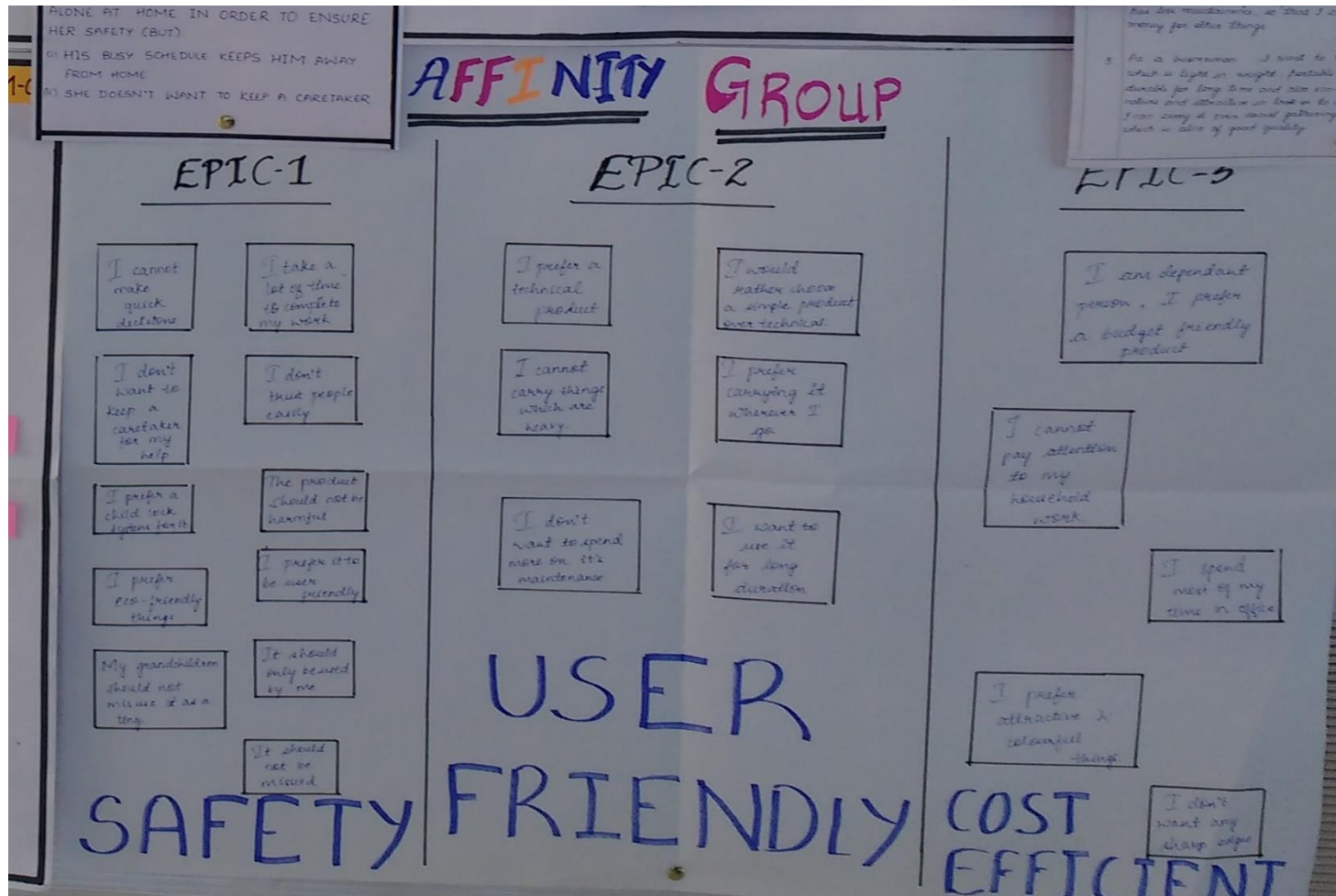
Our Value Proposition is:-

Reviving the quality life of Gujaratis through implementing and designing aids so as to ensure a happy living which is durable, reliable, useful, safe and user-friendly.

Req. NO	Epic No	User story ID	Requirement	demand wish	Importance	Category
1	1	1	The product should have required in emergency situation.	D	1	Operation
2	2	2	Securest and affordable.	Dx		Security
3	1	3	Emergency alert.	D	2	Operation
4	2	4	The product should be affordable to everyone.	D	5	Costs
5	1	5	Secured	D	3	Safety
6	3	6	The product should be of light weight.	D	4	Portability

AFFINITY GROUP

the combining of user stories and forming the epics and segregating them into one group.



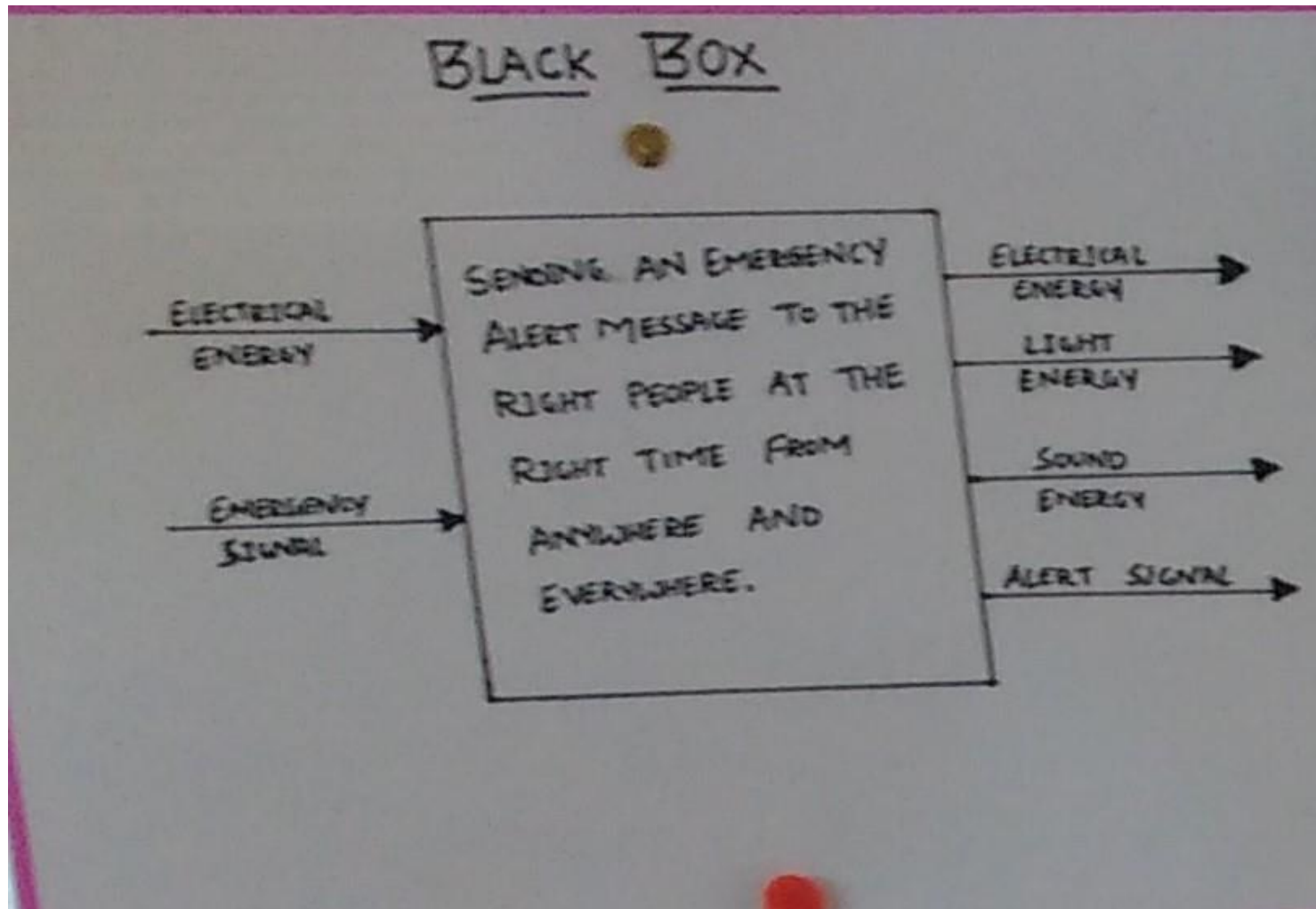
VALUE PROPOSITION

it is used to know the pain gain factors in old age people.

VALUE PROPOSITION		
Sl.No.	PAIN	GAIN
1.	Cannot afford a car.	Does not require a car.
2.	Has a limited knowledge of using a smartphone.	Is user-friendly, and adaptable.
3.	Not able to socialize.	Will be able to socialize.
4.	Cannot carry more weight.	Can be carried easily anywhere and everywhere.
5.	Feels insecure.	Can be confident and secure.
6.	Takes more time to contact people in case of emergencies.	Will be able to contact in very less time.
7.	Cannot afford costly devices.	Is cost effective and affordable.
8.	Reduced mobility.	Increased mobility.

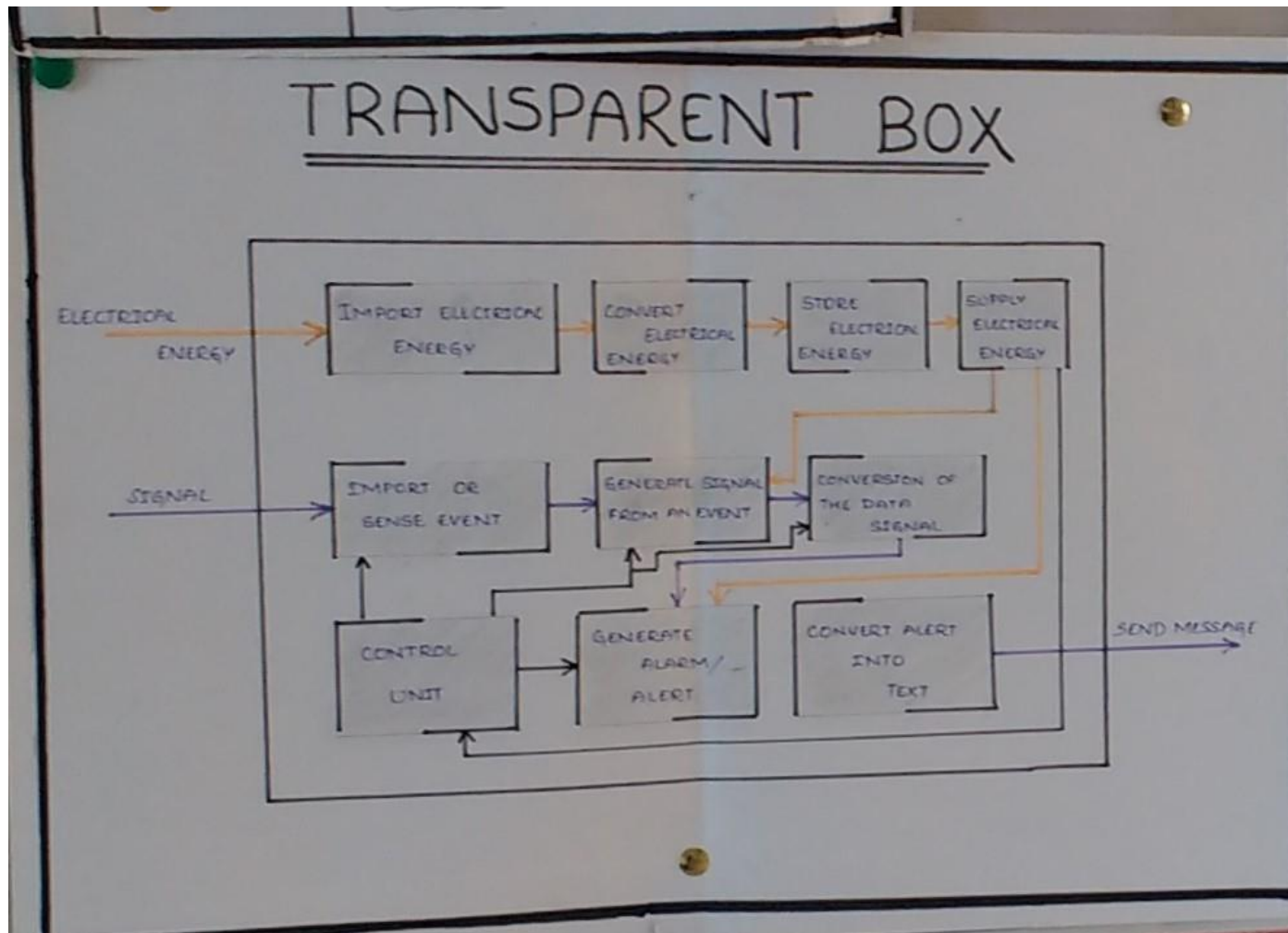
BLACK BOX

A black box refers to a system whose behaviour has to be observed entirely by inputs and outputs



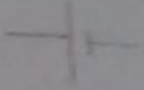
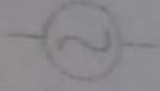
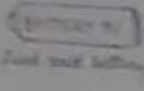
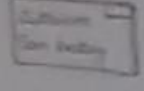
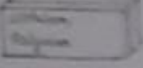
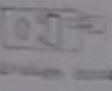

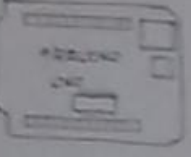
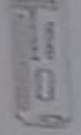




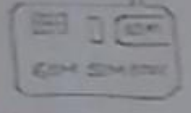
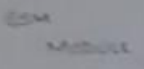
TRANSPARENT BOX

White box testing refers to a scenario, the tester deeply understands the inner workings of the system or system component being tested.



MORPHOLOGICAL CHART

A morphological chart is a visual way to capture the necessary product functionality and explore alternative means and combinations of achieving that functionality.

SL NO	FUNCTIONS	ALTERNATES
1.	IMPORT ELECTRICAL ENERGY	 DC voltage  AC voltage
2.	CONVERT ELECTRICAL ENERGY	
3.	STORE ELECTRICAL ENERGY	 Lead acid battery  Lithium Ion battery  Lithium Polymer
4.	SUPPLY ELECTRICAL ENERGY	
5.	IMPORT OR SENSE EVENT	 Variable switch  Limit switch
6.	GENERATE SIGNAL FROM AN EVENT	
7.	CONVERSION OF THE DATA SIGNAL	 ARDUINO UNO  RASPBERRY PI
8.	CONTROL UNIT	
9.	GENERATE ALARM / ALERT	 Buzzer  LED  Bell  Message
10.	CONVERT ALERT INTO TEXT	 COM SHIELD  COM MODULE

CONCEPT SCREENING AND SCORING Screening and scoring is about reducing many ideas into a smaller and more manageable set

CONCEPT SCREENING					CONCEPT SCORING							
SELECTION CRITERIA	A	B	C	Ref	SELECTION CRITERIA	WEIGHT	A		B		C	
							RATING	WEIGHTED SCORE	RATING	WEIGHTED SCORE	RATING	WEIGHTED SCORE
POWER CONSUMPTION	-	-	+	0	POWER CONSUMPTION	15%	1	0.15	3	0.45	3	0.45
WEIGHT	-	-	0	0	WEIGHT	20%	2	0.4	1	0.2	4	0.8
PORTABILITY	-	-	+	0	PORTABILITY	15%	3	0.45	2	0.3	5	1.25
EASE OF HANDLING	-	+	+	0	EASE OF HANDLING	10%	2	0.2	3	0.3	3	0.3
ADJUSTABLE NOISE	+	+	0	0	ADJUSTABLE NOISE	20%	2	0.4	3	0.6	4	0.8
LOAD HANDLING	-	-	-	0	LOAD HANDLING	10%	3	0.3	2	0.2	3	0.3
PLUSES	1	2	3									
MINUSES	5	4	1									
SAMES	0	0	2									
NET	-4	-2	2									
RANK	3	2	1									
CONTINUE	NO	NO	YES									

SPECIFICATIONS

NEED	RANK	POWER SUPPLY NEEDS	CUSTOMER	SPECIFICATIONS	FUNCTIONS	TEST METHOD
1	5	PORTABLE	ALL AGE GROUP	NET WEIGHT: 450g	TRANSPORT SYSTEM	WEIGHS ENTIRE WIRELESS SYSTEM
			ALL AGE GROUP	SYSTEM VOLUME:	TRANSPORT SYSTEM	MEASUREMENT OF THE WHOLE SYSTEM VOLUME
2	1	TACTICAL	OLD AGE GROUP	AUDIBLE NOISE:	PROTECTS USERS OF LOUD NOISE	MEASURING THE NOISE LEVEL FROM THE DEVICE USING A DECIBEL METER

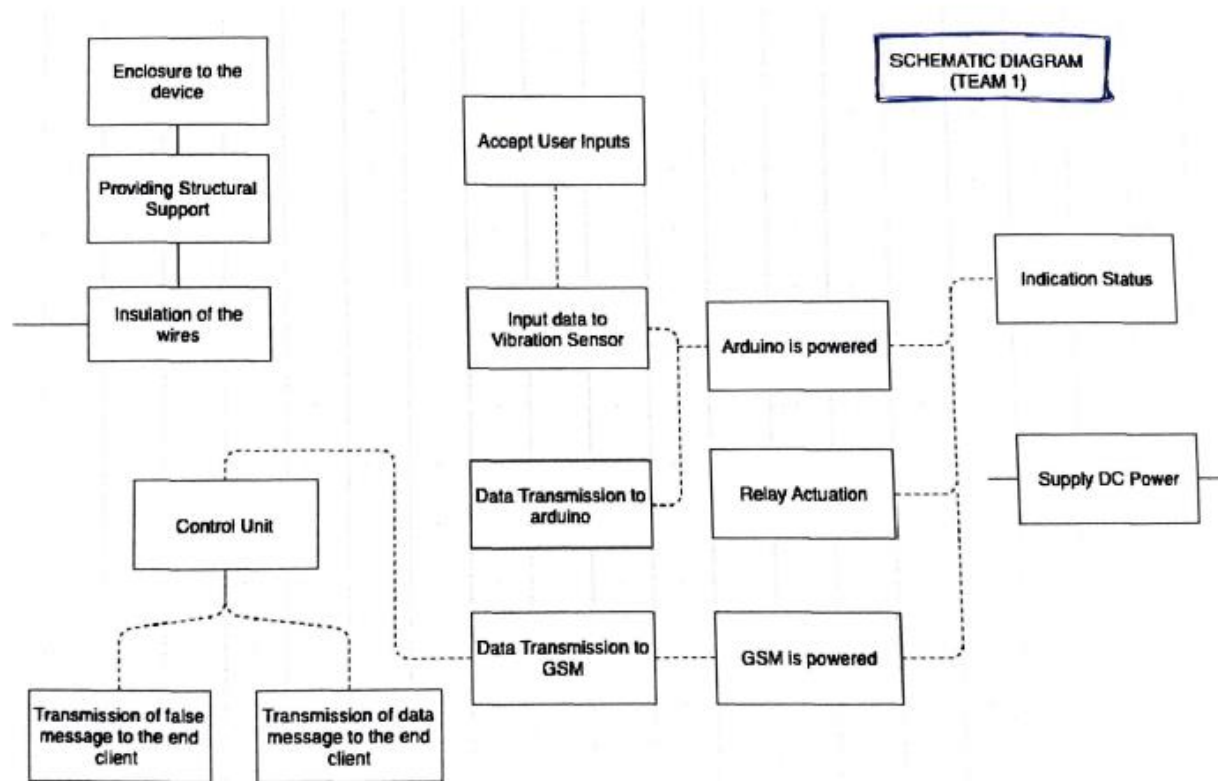
3	5	SUPPLY POWER		POWER RATING ALKALINE BATTERY CAPACITY:500mah	DELIVERING OF ENERGY	MEASURING POWER USING MULTIMETER ALSO THE INPUT AND OUTPUT VALUES.
				VOLTAGE RATING: 9V, PEAK VOLTAGE: 9.6V,8.4V	DELIVERING OF ENERGY	MEASURING VOLTAGE USING OSCILLOSCOPE
				RIPPLE % OF BATTERY VOLTAGE:	DELIVERING OF ENERGY	MEASURING RIPPLE VOLTAGE USING OSCILLOSCOPE
				LI-POLYMER CHARGE TIME: 1-2 HOURS	CONSUMING ENERGY	PUT BATTERY FOR CHARGING AND USE A STOPWATCH TO MEASURE TIME

REQUIREMENTS

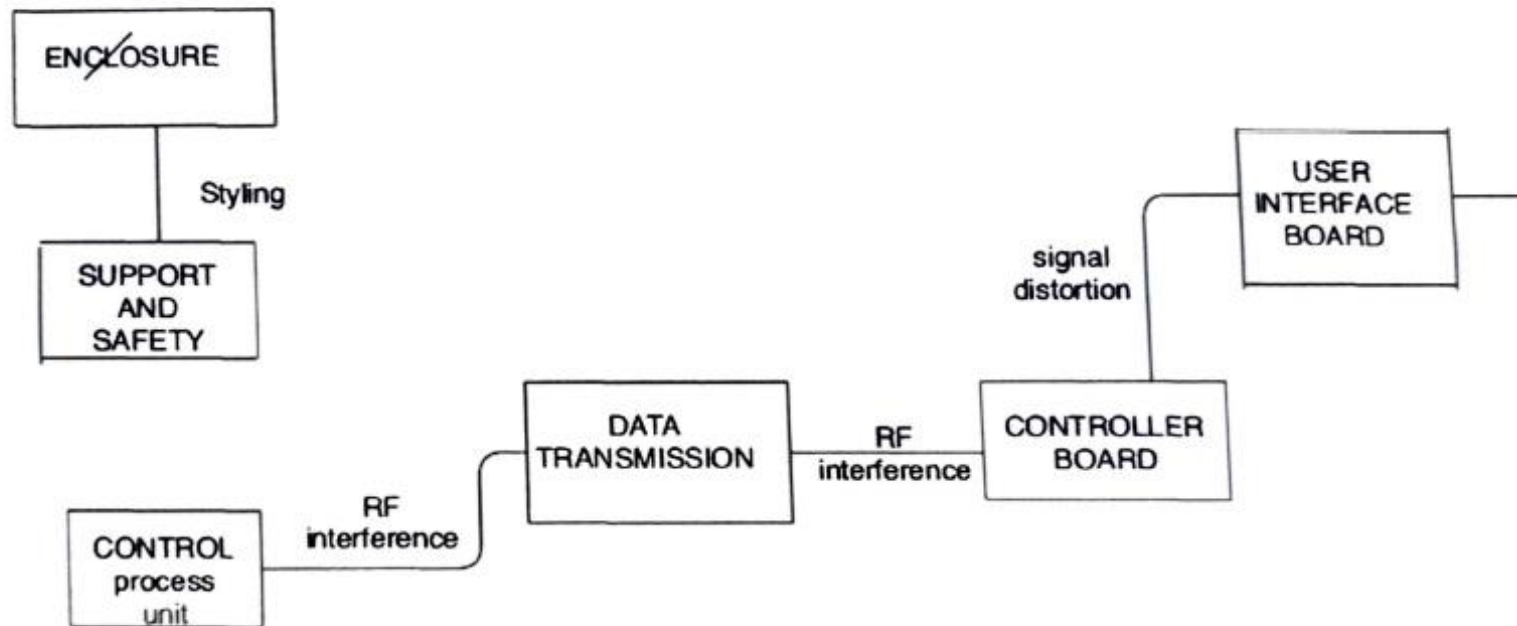
REQUIREMENT	REASON	EVALUATION METHOD
The device should be portable for the old aged group to carry it	So that the device can be carried anywhere and everywhere	Measurement of weight of the device with analysis of the old aged group can carry it.
The device can send message and call to the uploaded phone numbers	The emergency signal can be sent to the guardian or neighbour to caution about the user.	Test and trial of the control program.
The device performs the functions in short setup time	The emergency message and call need to be delivered in less time to the end user	Testing the control program using the stopwatch to measure it.
The device must be easily operable by two or three people	One person to send the emergency signal and the end user to receive the signal.	During the control program test, we will check how many people needed to be operated.
The device must use less frequency of sound	So that the old age people can be audible enough to hear the sound	This test is evaluated using the decibel meter and the standard range of audible sound in adults.
The device must be safe to use	No explosions and no sharp edges.	By designing prototype with safety measures.
The device needs to be robust	Suppose it falls down, it needs to withstand the drop impact.	By using the ESS drop test method for evaluation method.
The materials used in the device should be eco-friendly	In order to safe guard the environment.	Referring to the eco-friendly materials used globally.

EMBODIMENT PHASE

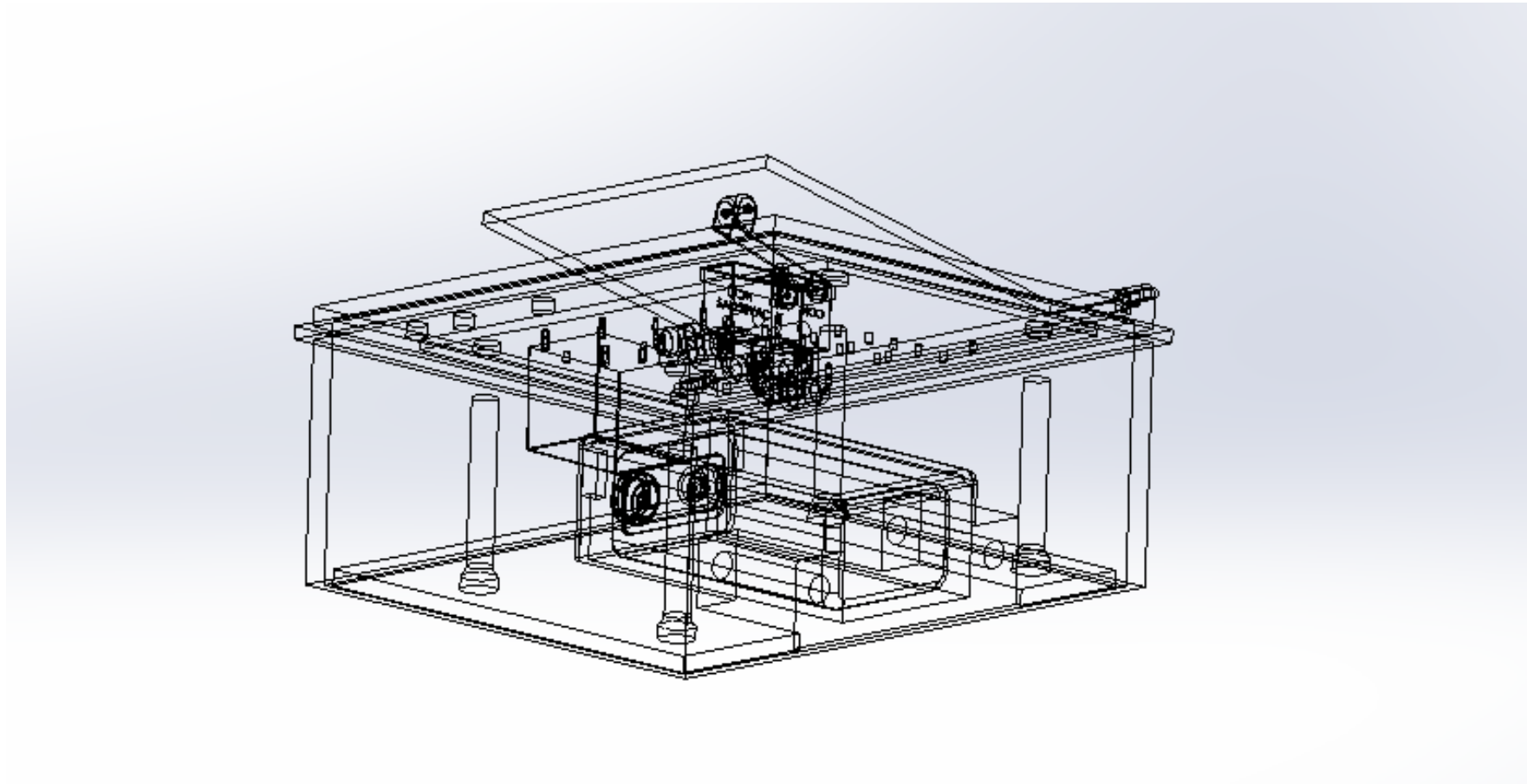
Clustering into chunks



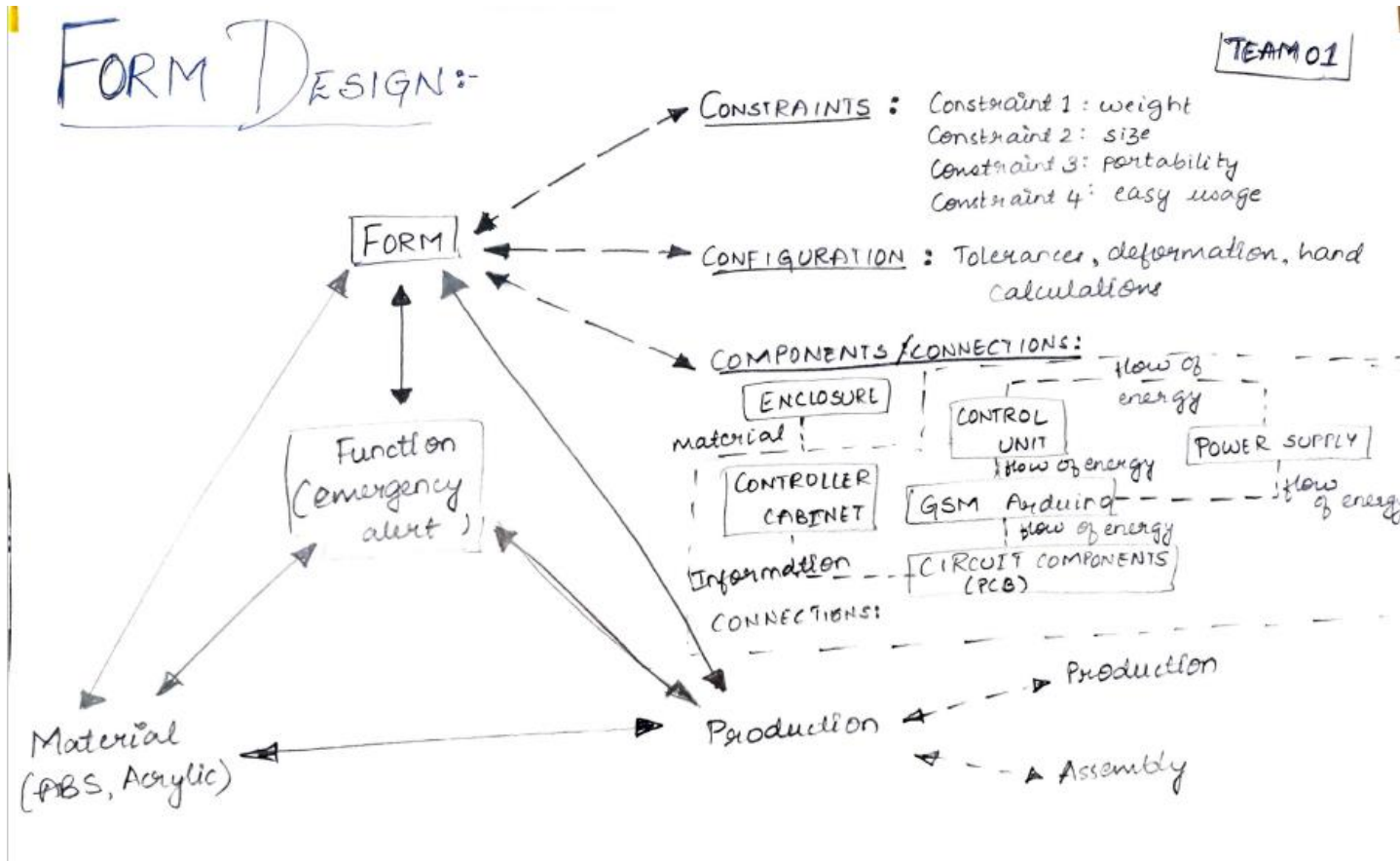
Incidental interactions



Geometric layout



Form design



Parametric Design

PARAMETRIC DESIGN:-

SIZE AND STRENGTH:-

* Maximum frequency of vibration: 1200 Hz

* Required factor for safety:

- smooth material
- surface finish without any sharp edges
- selection of lighter material.
- selection of a good quality material.

Failure Modes and effect Analysis(FMEA)

* While designing our product using solidworks and pcb in eagle software. We encountered a failure mode, the idea of self built-in ~~attd~~ arduino on PCB failed because of the size and shape constraint. This is we had to redesign it.

CODE

```
const int analog Pin = A7;
const int led Pin = 13;
const int threshold = 800;
const int buzz=9;
const int blue limit=10;
const int ledPin1 = 11;
const int relay = 7;
void False ();
void setup ()
{pinMode (relay, OUTPUT);
  pinMode (led Pin, OUTPUT);
  pinMode (ledPin1, OUTPUT);
  pinMode (buzz, OUTPUT);
  pinMode(blue limit, INPUT);
  Serial.begin(9600);
  Serial.begin(9600);
  digitalWrite(relay,HIGH);
}

void loop() {
  int analogValue = analogRead(analog
Pin);
  if (analogValue > threshold)
  {
    digitalWrite(ledPin,HIGH);
    tone(buz,10);
    Serial.println("AT +CMGF = 1");
    delay(1000);
    Serial.println("AT+CMGS=\"+9191104
78094\\r\"");
    delay(1000);
    Serial.println("Emergency");
    delay(1000);

    Serial.println((char)26);
    False();
  }
  else {
    digitalWrite(led Pin, LOW);
  }
  Serial.println(analogValue);
  delay(100);
}

void False()
{ int val = digitalRead(blue limit);
  if(val == 1)
  {
    digitalWrite(led Pin, HIGH);
    Serial.begin(9600);
    Serial.println("AT +CMGF = 1");
    delay(1000);
    Serial.println("AT+CMGS=\"+91911
0478094\\r\"");
    delay(1000);
    Serial.println("False emergency");
    delay(1000);
    Serial.println((char)26);
    noTone(buzz);
    digitalWrite(ledPin1,LOW);
  }
  else{
    //digitalWrite(ledPin1,LOW);
    Serial.println(blue limit);
    delay(100);
  }
}
```

PHOTOGRAPHS



CONCLUSION

This course has been a really great experience for us as it helped us in empathizing with old age people and to get to know their problems and their state of mind. Following Agile methodology for developing the product was quite useful as we can modify our product at any stage of manufacturing it. The agile methodology sets a standard for approaching a path to build a product from the problem statement. We have practiced the agile method in this mini project course and we have acquired a great knowledge about each flow of process in the agile method. The problem statement which we deal with is '**An Emergency Alert System**' as it has been observed that many people have underwent permanent damage to their body or even dead, because of not getting help at the right time. Hence, we feel our product may be useful in establishing that connection for help at the right time and may be able to save the lives of people.

We came up with many difficulties in developing the prototype but still we worked as a team and completed it and thus we experienced the dedication and co - operation of our fellow team members and these difficulties were like stepping stones for us in building the product.

By implementing in mini project course, we were able to understand the importance of each process and the sequence. The most exciting experience was about approaching the geriatrics to understand their problems. The team work played a vital role and division of work eased us and helped in building the product in time.

By practicing agile methodology, it mainly helped us in focusing on the users, as we met them and spent time with them and we have learnt the steps involved in finding the real-world problems and also the different ways of connecting to the users.