PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF-RELIANT

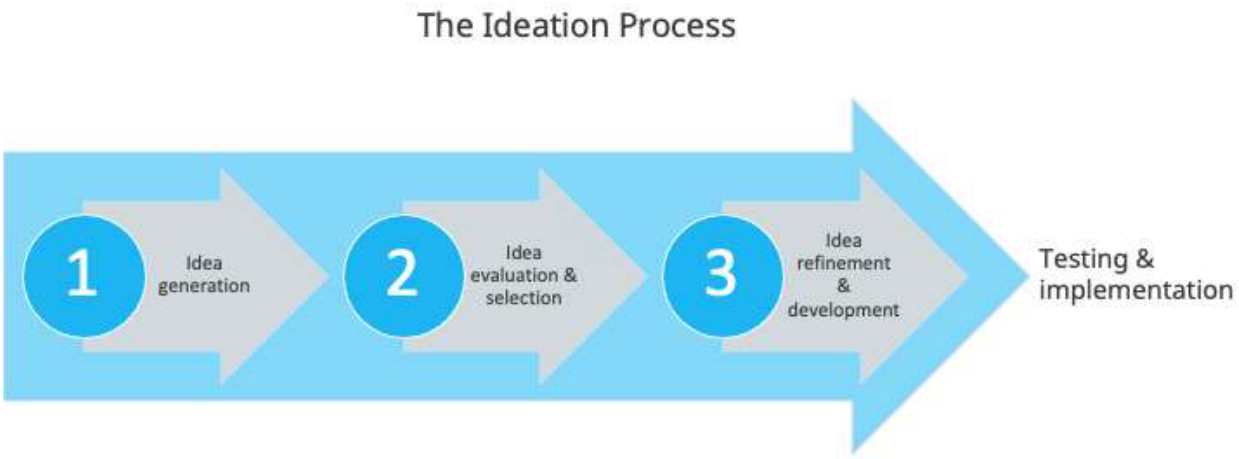
Team ID: PNT2022TMID11032
Team Leader: Marina Shanshiya F P
Team Member 1: Renjini M
Team Member 2: Sanjitha K
Team Member 3: Praiselin C

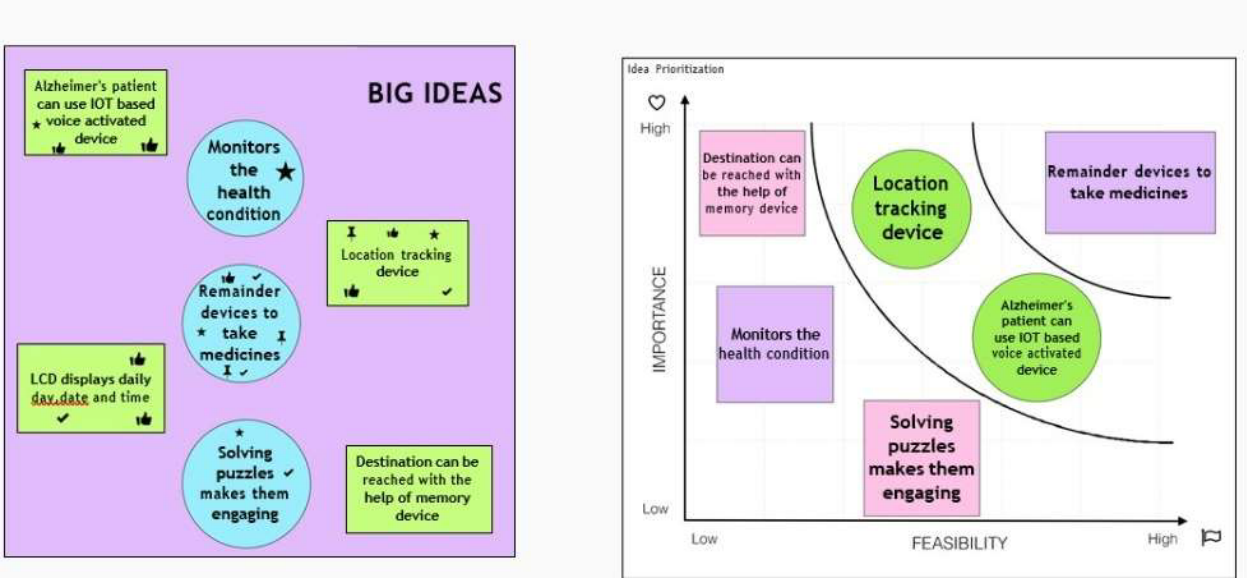
PROJECT OBJECTIVES

A smart voice assisted device that helps the Alzheimer's patient in reminding them to take proper medication to lead a systematic lifestyle. This app collects medical information of the patient and stores them in the database which can be updated by the patient. It helps the patient to lead an independent life.

IDEATION

Ideation is the process of generating a broad set of ideas on a given topic with no attempt to judge or evaluate them. While the eventual goal of ideation is a high quality design that solves a specified problem, the focus of ideation is quantity instead of quality. It is the process where you generate ideas and solutions through sessions such as sketching, prototyping, brainstorming, brainwriting, worst possible idea and a wealth of other ideation techniques. Ideation is also the third stage in the design thinking process





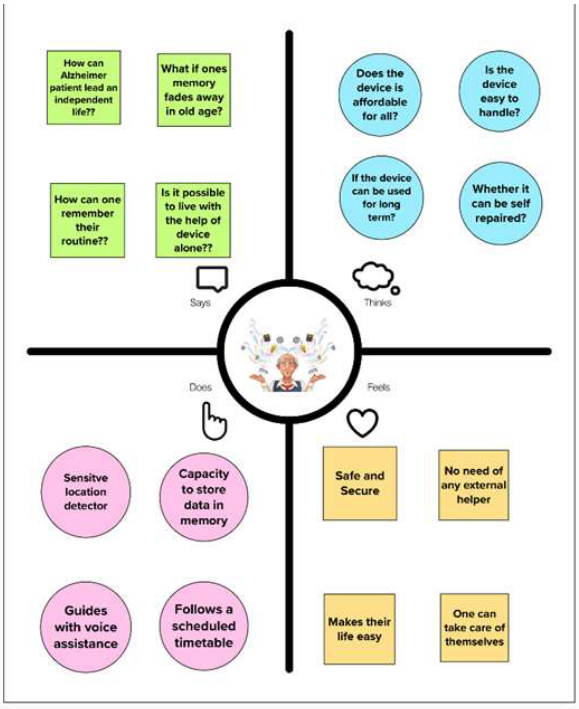
EMPATHY MAP

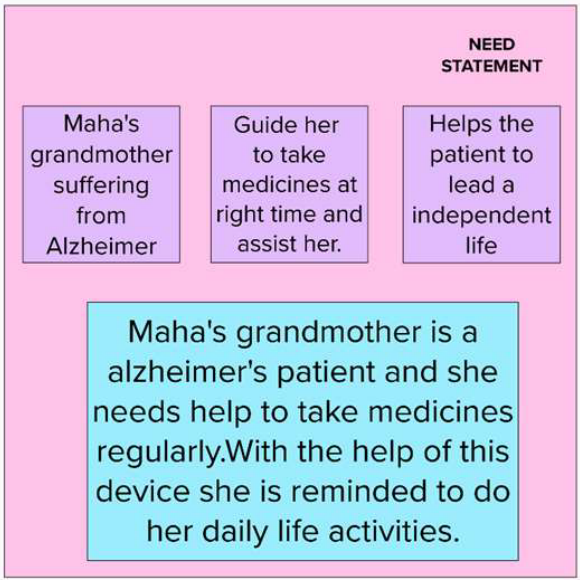
An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. Much like a user persona, an empathy map can represent a group of users, such as a customer segment. The empathy map was originally created by Dave Gray and has gained much popularity within the agile community helps to map what a design team knows about the potential audience. This tool helps to understand the reason behind some actions a user takes deeply. This tool helps build Empathy towards users

and helps design teams shift focus from the product to the users who are going to use the product.

1. Step 1: Establish Focus and Goals. Who is the person for the map? ...
2. Step 2: Capture the Outside World. ...
3. Step 3: Explore Inside the Mind. ...
4. Step 4: Summarize and Share.

S.No	Name	Designation	College Name
1.	MARINA SHANSHIYA F P 811519106083	TEAM LEADER	KRCE
2.	SANJITHA K 811519106123	TEAM MEMBER	KRCE
3.	RENJINI M 811519106123	TEAM MEMBER	KRCE
4.	PRAISELIN C 8115109106101	TEAM MEMBER	KRCE





LITERATURE SURVEY

• Seema S Kanagond - Dept. of E & C, KLEIT, Hubballi India, Smart assistive device, 2020 IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER), 30-31 October 2020 With improvement in technology, there have been attempts to utilize the new technology in various areas to improve the quality of human life. There is a paradigm shift in health care sector with technology invention. The main objective of the work proposed in this paper is to provide an assisting device for senior citizens who have talking and moving disabilities. A smart assistive device can support senior citizens that is operated based on touch screen. The system consists of Arduino Uno, 433MHz RF transmitter and receiver, 2.4- inch TFT LCD touch shield, 16*2 LCD module and I2C module. Elderly people can communicate family members by using TFT touch shield for their essential needs. This will help caretaker to respond accordingly. This system is helpful not only for elderly people but also dumb and bedridden people to communicate with other members of the family.
• P.Ranjana - Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai India and Elizabeth Alexander - Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai India, Automatic Medicine Reminder System, 2018 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), 2018 In today's life, human beings face difficulty to keep in mind the medicines they required to take. This paper proposes a model of automatic medicine reminder and apothecary system. This system can relieve unevenness in taking recommended dosage of pills on time prescribed by the doctor and switch from ways primarily reliant with the memory of the human being insignificant regulation, hence people can be freed doing wrong things due to human error like taking pill at different time with incorrect dosage. Various medicine boxes exist in the market. The proposed medicine box would help people who are under medication mainly for old persons to take the medicine on time without forgetting. It also continuously monitor the people's health condition like Blood pressure, ECG through the tensors kept at home and inform them to take necessary action. A person's life can be saved by this system. Human effort can also be decreased by this health alert and medicine remainder
• Divya Ganesh - Department of Electronics and Communication Engineering, Sri Sairam Engineering College Chennai India, Gayathri Seshadri - Department of Electronics and Communication Engineering, Sri Sairam Engineering College Chennai India, Sensors with Artificial Intelligence, 2019 International Conference on contemporary Computing and Informatics (IC3I), 12-14 December 2019 The advancements in medical science

and technology has resulted in an increased life span thus the mortality rate of the elderly has greatly decreased. The elderly often gets cognitively impaired and require urgent medical services which when left unnoticed may lead to fatal consequences. Due to lack of social care support for these adults, there arises the need to develop cost-effective assistive healthcare technological solutions for taking care of the elders and giving them the best techfriendly experience. Intelligent homes, an environment of sensors with artificial intelligence integrated with home appliances, can provide the best solution for continuous and remote monitoring of the health of the persons. This helps elders to control various devices, also get immediate attention from the family members, healthcare assistants and/or have frequent visit to hospitals. Basically, an intelligent bed can help elders to prevent the occurrence of bedsores and falling off from bed by monitoring the position of the person while they are in bed. Personal assistant, to respond to the commands given by the person. We use Internet of Things (IoT) to establish the connectivity between the appliances, the user and his/her network. The major element of this system is a Raspberry Pi which will collect the data from the sensors and interprets

• Adriana Alexandru; Dora Coardos; Eleonora Tudora – auth, IOT based remote monitoring, 2019 22nd International Conference on Control Systems and Computer Science (CSCS), 28-30 May 2019 In the context of a fast aging population and of its increasing need for healthcare and assistance, ubiquitous usage of Internet of Things (IoT)-based smart applications can mitigate the consequential social burden. Connected sensors and devices inside the seniors' home produce a significant amount of data about them and their daily activities. IoT and Big Data Analytics (BDA) are an important mean to derive knowledge and support for improving the life conditions for the older adults by increasing the role of Information and Communication Technology (ICT) for accomplish this goal. IoT analytics can aid in personalizing applications that benefit both elderly people and the ever-growing industries that need adapt their offer to the consumer's profiles. This paper presents a new platform that enables innovative analytics on IoT captured data from smart residences of elderly people. A solution based on the use of fog nodes and cloud system is suggested in order to afford data-driven services and to manage the complexity and provision of the necessary resources for online and offline data processing, storage, and analysis. The requirements and the design of the platform architecture are underlined. We propose an architecture of a platform based on fog computing nodes coupled with cloud computing that offers an efficient near real time processing of the big data resulted from IoT system that provides insights and data processing and analysis facilities into cloud. This integrated design has an important impact on time sensitive applications by addressing the

latency issues of cloud

• Akhilesh Agrawal - Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science Wardha India and Vedant Yede - Dept. of E and TC Engineering, Y. C. College of Engineering, Nagpur India, Pill reminder, 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2021 When it comes to loved ones, humans strive to keep them fit and healthy at all times. But what if they forget to take their medicine and become ill as a result? Hence, many patients require medication at the health care center, and it is difficult for us to remind each patient to take medicine at a specific time. Traditional way requires lot of human effort to remind the patient to take medicine. But in this digital era, humans make use of machines to do certain works.

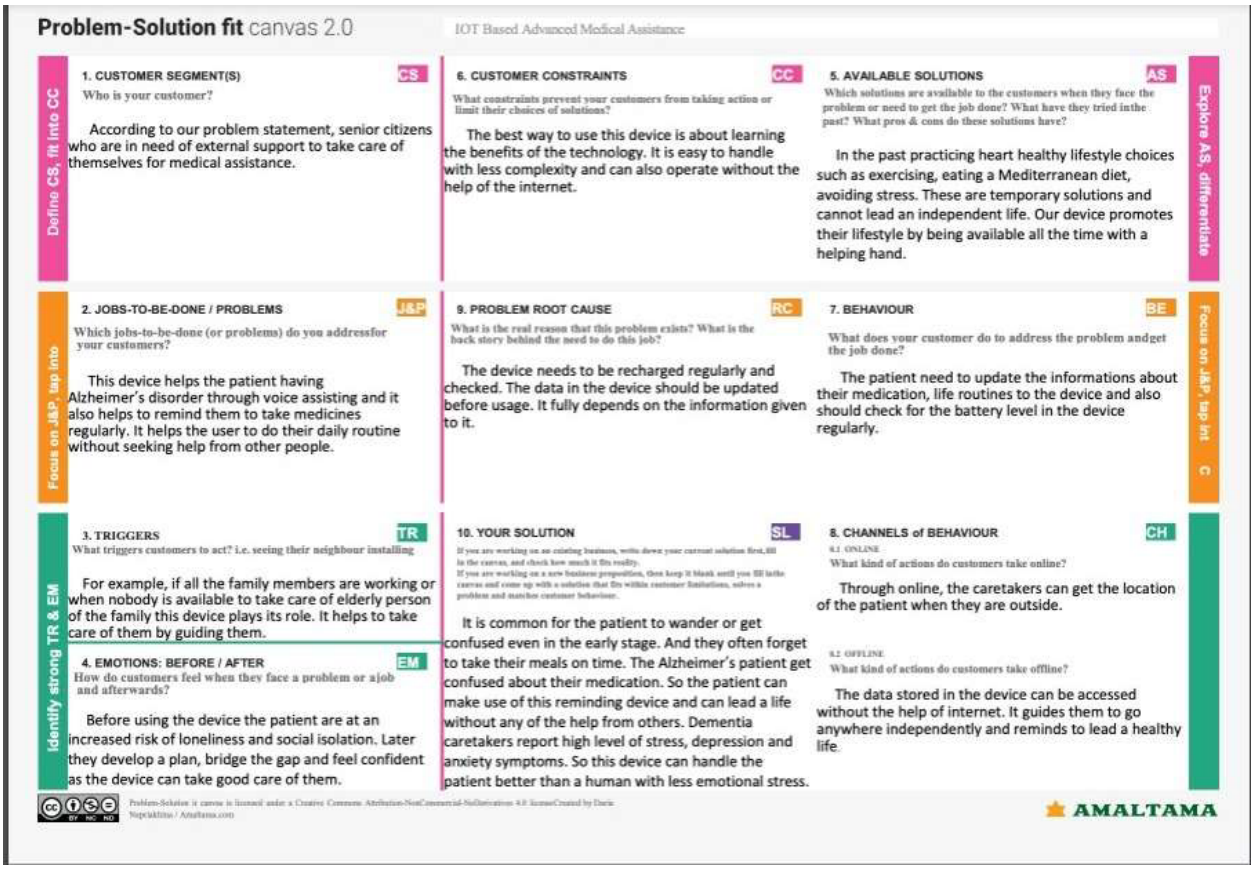
Pill remainder has a wide range of uses, including use by patients at home, doctors in hospitals, and a variety of other settings. This paper presents a working of advance pill remainder setup, which can remove asymmetry in taking medicine dosages and remind the patient to take medicine at prescribed time and particular number of dosages. In this approach, the users are switching from human memory to automated supervision.

• P.A. Harsha Vardhini; M.Shiva Harsha; P.Naga Sai; P. Srikanth, Smart medicine box, 2020

12th International Conference on Computational Intelligence and Communication Networks (CICN), 25- 26 September 2020 Medicine consumption has increased by a drastic rate and has become a common practice by every person. With the tremendous growth in the medical field technology, many dreadful diseases are being cured. Evolution of IOT provides various solutions for the major challenges faced by health systems. Development of smart homes and smart cities with e-medicine health services strengthened the concept of patient centric IOT based health eco system. Reminding self for timely consumption of medicine is necessary. Memory Impairment known as amnesia in medical terms is the memory loss or unusual forgetfulness. For elderly patients, having a problem of remembering the schedules for their medicine intake, proposed medicine assistive system keeps in track of the medication schedule reminds the intake at the specified time. Cost effective smart medicine box is designed and implemented that even illiterates, elderly and poor people can also afford and easily make use of it

PROJECT DESIGN PHASE 1

PROBLEM SOLUTION FIT



PROPOSED SOLUTION

Proposed Solution means the technical solution to be provided by the Implementation agency in response to the requirements and the objectives of the Project. 1.Sample 2. Proposed Solution means the Proposed System with modifications that meet the Agency's requirements as set forth in this RFP.

Project Design Phase-I
Proposed Solution Template

Date	30 September 2022
Team ID	PNT2022TMID11032
Project Name	Project - IOT Based Advanced Medical Assistance
Maximum Marks	2 Marks

Proposed Solution Template:

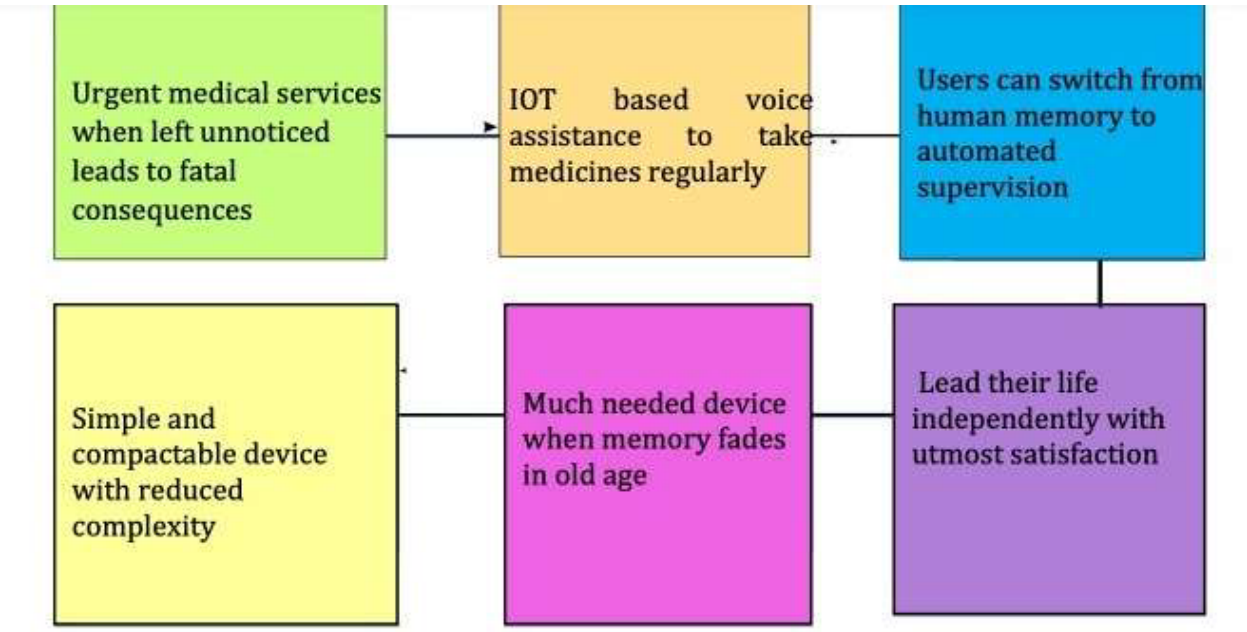
Project team shall fill the following information in proposed solution template.

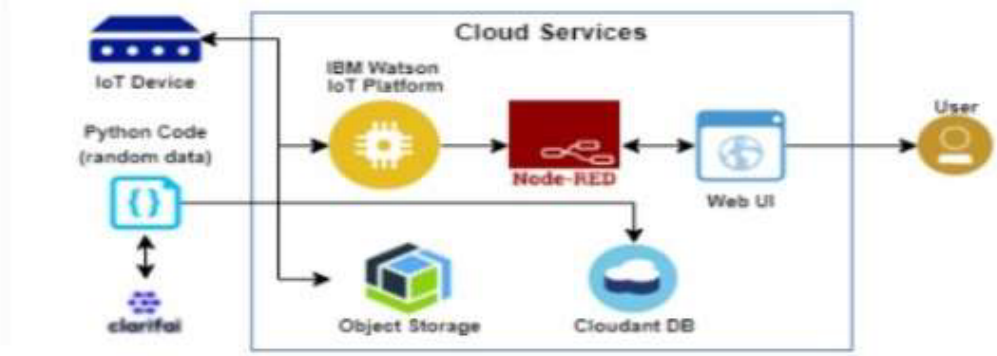
S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	In the nineties, numerous studies began to highlight the problem of the increasing number of people with Alzheimer's disease in developed countries, especially in the context of demographic progress. The advancements in medical science and technology have resulted in an increased life span thus the mortality rate of the elderly has greatly decreased. The elderly often gets cognitively impaired and require urgent medical services which when left unnoticed may lead to fatal consequences. Due to lack of social care support for these adults, there arises a need for taking care of the elders and giving them the best friendly experience.
2.	Idea / Solution description	Many patients require medication and it is difficult for caregivers to remind the patient to take medicine at a specific time. Traditional way requires lot of human effort to remind the patient to take medicine. But in this era, humans can make use of the IOT based voice assistance to take medicines at the right time. It also has a wide range of uses, including the patients at home, doctors in hospitals etc. This system can relieve tension in taking recommended dosage of pills on time prescribed by the doctor hence people can be freed doing wrong things due to human error like taking pill at different time with incorrect dosage. Human effort can also be decreased by using this remainder device. In this approach, the users can switch from human memory to automated supervision.
3.	Novelty / Uniqueness	Humans can make use of the IOT based voice assistance device to take medicines at the right time without any external help thereby leading an independent life.
4.	Social Impact / Customer Satisfaction	With the help of IOT based voice assistance Alzheimer's patient can remember their daily routine with just a simple device. It has the capacity to store datas in memory. It is also affordable and can be used for a very long term by making their life easy.

SOLUTION ARCHITECTURE

Solution architecture is a practice to provide ground for software development projects by tailoring IT solutions to specific business needs and defining their functional requirements and stages of implementation. It is comprised of many subprocesses that draw guidance from various enterprise architecture viewpoints.

- Matching solutions with the corporate environment.
- Meeting the requirements of all stakeholders.
- Accounting for project constraints.
- Selecting the project technology stack.



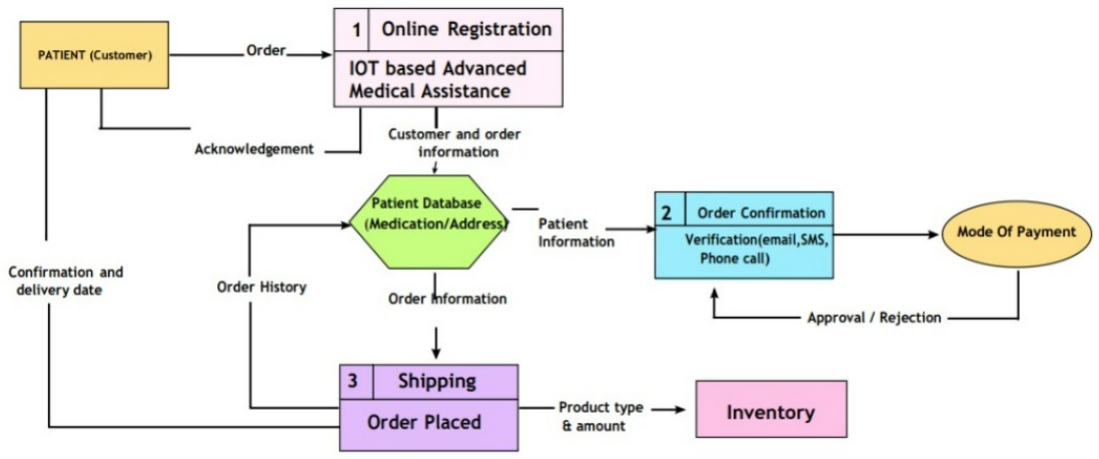


PROJECT DESIGN PHASE 2
CUSTOMER JOURNEY MAP

- Audience engagement.
- Leads converting into customers.
- Nurture the customers.
- Fulfill the customer expectations.

PHASES	Phase 1 (Motivation)	Phase 2 (Product search)	Phase 3 (About product)	Phase 4 (Pros of the device)	Phase 5 (Product Evaluation)
Activities Performed	Best reviews from users motivates to buy the device	Advertisements of our product are in the top search	Inbuilt alarm systems helps one to remind in a scheduled time	Convenient to use and makes them comfortable	Comparatively our product has many features
Emotions	It should not be much complex	Products available in all websites makes customer delighted	Accessed by themselves without any external helper	Makes life simple and a non emissive device	Patients don't expect help from anyone
Over All Experiences	Good	Good	Good	Good	Excellent
Customer Expectations	Easy availability of product	Search engine helps to search the device in a simpler way	A voice assisted device to guide a patient	A product that makes Alzheimer's patient lead an independent life	Self repaired and can be used for a long term

DATA FLOW DIAGRAM



FUNCTIONAL REQUIREMENTS

A functional requirement defines a system or its component. A non-functional requirement defines the quality attribute of a software system. It specifies “What should the software system do?” It places constraints on “How should the software system fulfill the functional requirements?

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	11 October 2022
Team ID	PNT2022TMID11032
Project Name	IOT Based Advanced Medical Assistance
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**User Requirements**	Alerts one to take medicine on time Identify person's location through GPS Reminds on important events, date, day
FR-2	**User Registration**	Manual Registration Registration through webpage Registration through Form Registration through Gmail
FR-3	**User Confirmation**	Confirmation via Phone Confirmation via Email Confirmation via OTP
FR-4	**Payment Options**	Cash on Delivery Net Banking/UPI Credit/Debit/ATM Card
FR-5	**Product Delivery and Installation**	Door step delivery Take away 1 year warranty with free installation
FR-6	**Product Feedback**	Through Webpage Through Phone Call Through Google forms

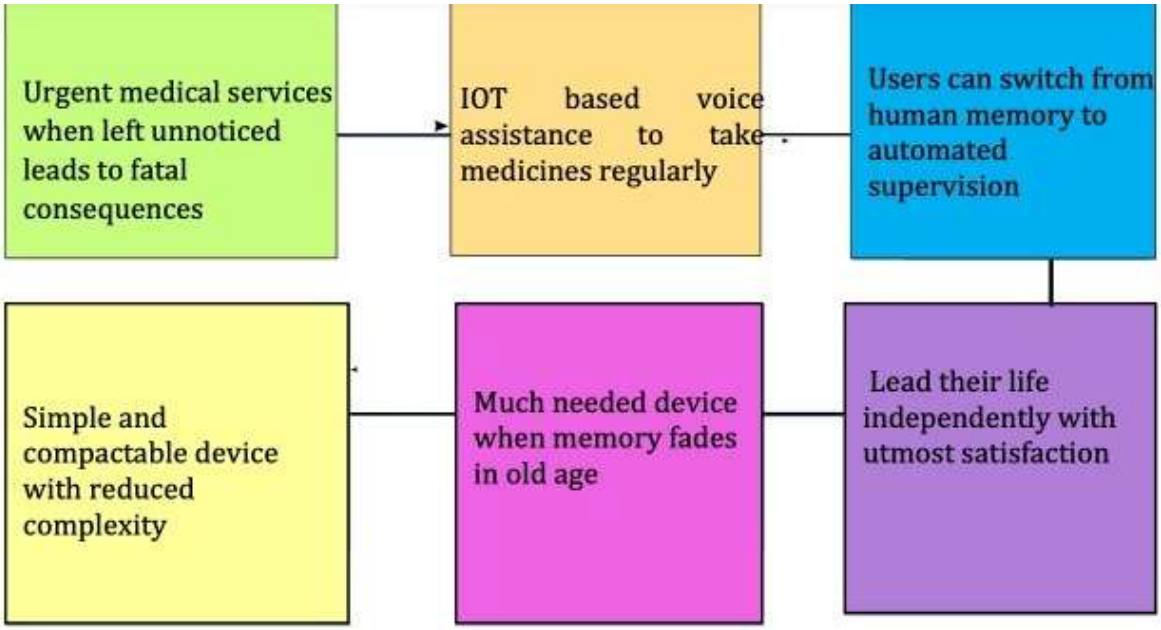
TECHNOLOGY ARCHITECTURE

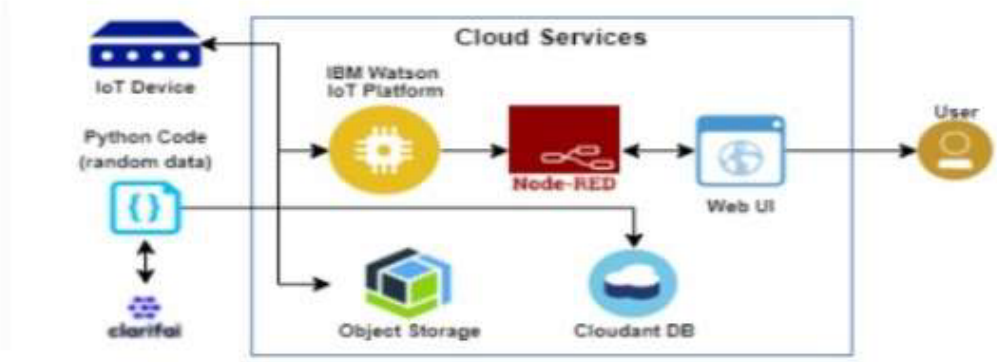
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Have a clear and self-explanatory manual Compact and Comfortable Self-Repaired and less emissive
NFR-2	**Security**	Application has to be secured with 2 step authorization. Passwords and passkeys will be assigned as per the users need.
NFR-3	**Reliability**	The device is relatively simple to operate which reminds the seniors to take their medication Provide a large number of services which includes the daily routine by which they can be independent
NFR-4	**Performance**	The timer inbuilt in the device alerts the patient about the data in the memory The device is provided with a memory space in which the data to be remembered should be given beforehand
NFR-5	**Availability**	It has inbuilt alarm system which remind to take medicines Data in memory can be customized by the user
NFR-6	**Scalability**	The product has capacity to store data in memory It can be used for very long time Users switch from human memory to automated memory

SOLUTION ARCHITECTURE





PROJECT PLANNING PHASE

MILESTONE AND ACTIVITY

Project Planning Phase

Milestone and Activity List

Date	22 October 2022
Team ID	PNT2022TMID11032
Project Name	PERSONAL ASSISTANCE FOR SENIORS RELIANCE WHO ARE SELF RELIANT

TITLE	DESCRIPTION	DATE
Literature Survey& Information Gathering	A literature review is a comprehensive summary of previous researches on the topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research.	3 September 2022
Prepare Empathy Map	An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. It helps us to understand the customer's pain, gain and difficulties fromtheir point of view.	10 September 2022
Ideation - Brainstorming	Brainstorming is a group problem-solving method that helped us to gather and organize various ideas and thoughts from team members.	17 September 2022
Define Problem statement	The Customer Problem Statement helps us to focus on what matters to create experiences people will love. A well-articulated customer problem statement allowed us to find the ideal solution for the challenges customers face.	19 September 2022

Problem Solution Fit	It helped us understand and analyze all the thoughts of our customer, their choice of options, problems, root cause, behavior and emotions.	26 September 2022
Proposed solution	It helped us analyze and examine our solution more in the grounds of uniqueness, social impact, business model, scalability etc.	28 September 2022
Solution Architecture	Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. It helped us understand the features and components used to complete the project.	1 October 2022
Customer journey map	It helped to analyse the various steps, interactions, goals and motivation, positives, negatives and opportunities.	7 October 2022
Solution requirements	It briefs about functional and non-functional requirements. It involves the various steps in the entire process. It also specifies features usability, security, reliability, performance, Availability and scalability.	12 October 2022
Technology stack	A tech stack is the combination of technologies a company uses to build and run an application or project. It helps us analyse and understand various technologies that needs to be implemented in the project.	15 October 2022

Problem Solution Fit	It helped us understand and analyze all the thoughts of our customer, their choice of options, problems, root cause, behavior and emotions.	26 September 2022
Proposed solution	It helped us analyze and examine our solution more in the grounds of uniqueness, social impact, business model, scalability etc.	28 September 2022
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Customer journey map	It helped to analyse the various steps, interactions, goals and motivation, positives, negatives and opportunities.	7 October 2022
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Technology stack	A tech stack is the combination of technologies a company uses to build and run an application or project. It helps us analyse and understand various technologies that needs to be implemented in the project.	15 October 2022

SPRINT DELIVERY PLAN

Sprint planning is an event in scrum that kicks off the sprint. The purpose of sprint planning is to define what can be delivered in the sprint and how that work will be achieved. Sprint planning is done in collaboration with the whole scrum team.

• Sprint goal. Consider putting your sprint goal as one of the leading items on your agenda. ...

• Story points. ...

• Velocity. ...

• Capacity. ...

• Product backlog. ...
• Considerations. ...
• Scrum master. ...
• Product owner.

Project Planning Phase

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	**20 October 2022**
Team ID	**PNT2022TMID11032**
Project Name	**IOT Based Advanced Medical Assistance**
Maximum Marks	**8 Marks**

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming the password	2	High	SANJITHA K
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	RENJINI M
Sprint-1		USN-3	As a user, I can register for the application through Facebook	2	Low	PRAISELIN C
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	MARINA SHANSHIYA F P
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	PRAISELIN C
Sprint-1	Dashboard	USN-6	As a user, I can log into the application by entering email & password and access all the resources and services available	2	High	RENJINI M

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

PRE-REQUISITES

IBM CLOUD SERVICES

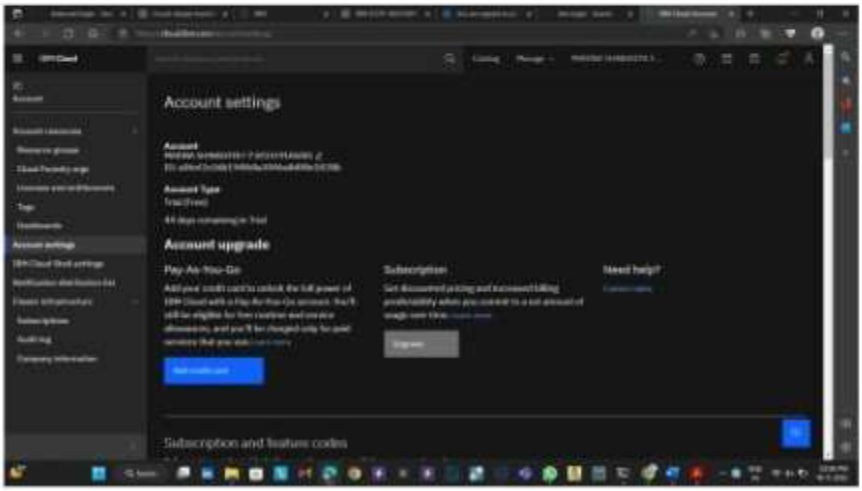
PREREQUISITES

IBM CLOUD SERVICES

Date	31 October 2022
Team ID	PNT2022TMID11032
Project Name	IOT Based Advanced Medical Assistance

IBM Cloud account created successfully

Team Leader IBM Cloud account creation



IBM SOFTWARE

PREREQUISITES

SOFTWARE

Date	20 October 2022
Team ID	PNT2022TMID11032
Project Name	IOT Based Advanced Medical Assistance

STEP 1: Python Installation

STEP 2: Open Python IDE Environment and installed python version