

Personal Assistance for Seniors Who Are Self-Reliant

1. Introduction

1.1. Project Overview:

An app is built for the user (caretaker) which enables him to set the desired time and medicine. These details will be stored in the IBM Cloudant DB. If the medicine time arrives the web application will send the medicine name to the IoT Device through the IBM IoT platform. The device will receive the medicine name and notify the user with voice commands.

1.2. Purpose:

Sometimes elderly people forget to take their medicine at the correct time. They also forget which medicine He / She should take at that particular time. And it is difficult for doctors/caretakers to monitor the patients around the clock. To avoid this problem, this medicine reminder system is developed.

2. Literature survey:

Advanced information technology, joined to the increasing use of continuous medical devices for monitoring and treatment, have made possible the definition of a new telemedical diabetes care scenario based on a hand-held Personal Assistant(PA). This paper describes the architecture, functionality and implementation of the PA, which communicates different medical devices in a personal wireless network. The PA is a mobile system for patients with diabetes connected to a telemedical center. The software design follows a modular approach to make the integration of medical devices or new functionalities independent from the rest of its components. Physicians can remotely control medical devices from the telemedicine server through the integration of the Common Object Request Broker Architecture (CORBA) and mobile GPRS communications. Data about PA modules'usage and patients'behavior

evaluation come from a pervasive tracing system implemented into the PA .The PA architecture has been technically validated with commercially available medical devices during a clinical experiment for ambulatory monitoring and expert feedback through telemedicine. The clinical experiment has allowed defining patients' patterns of usage and preferred scenarios and it has proved thePersonal Assistant's feasibility. The patients showed high acceptability and interest in the system as recorded in the usability and utility questionnaires. Future work will be devoted to the validation of the system with automatic control strategies from the telemedical center as well as with closed-loop control algorithms.

2.1. Existing problem:

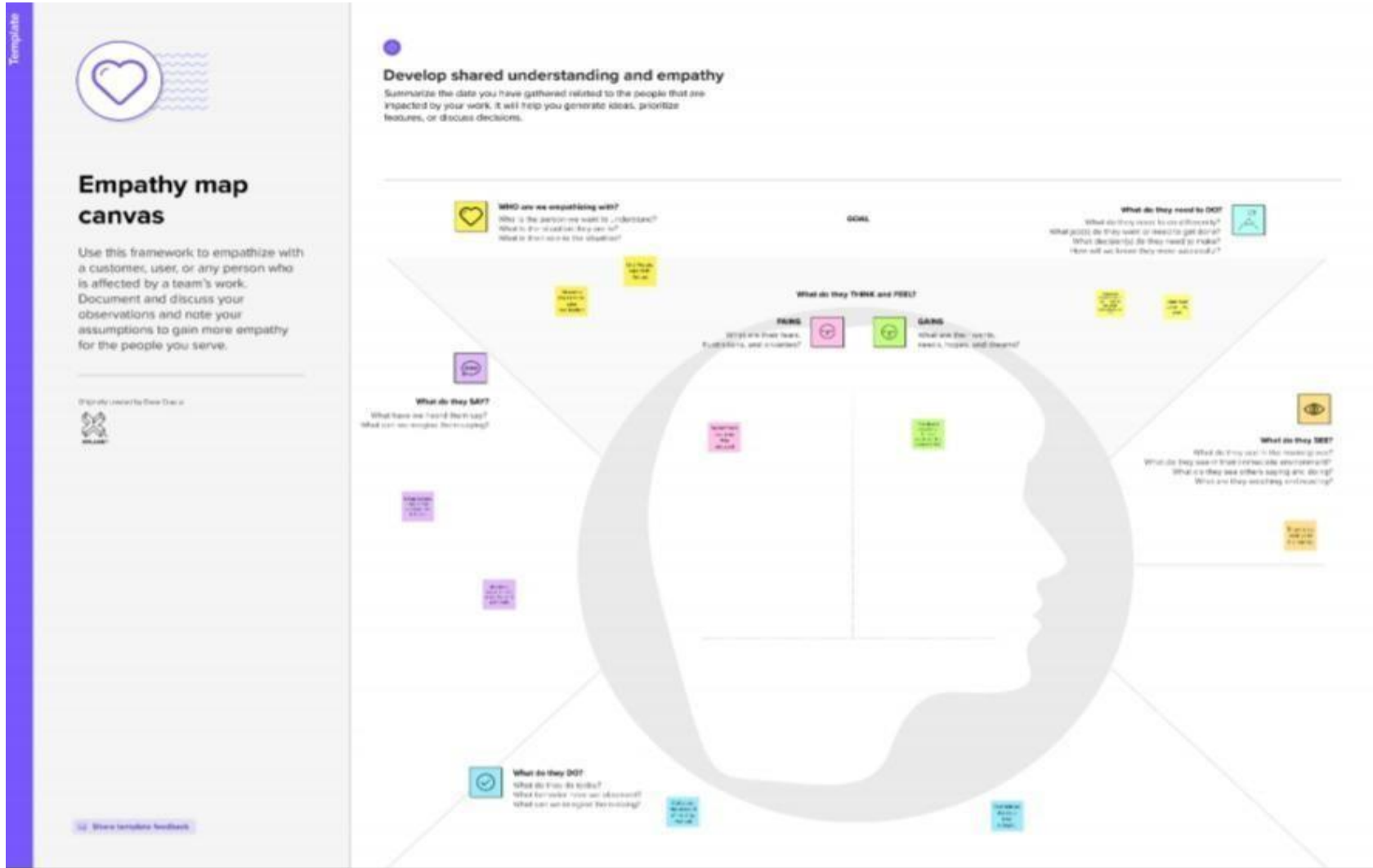
Elderly people let slip the medications at the correct time and the existing solution for this problem is setting reminders or using pill boxes, calendars, PersonalAssistance. Though the solutions give reminders, the voice commands or assistance given by this system is more efficient.

2.2. Problem statement definition:

Skipping medicines can be serious for some medical health conditions; Sometimes elderly people forget to take their medicine at the correct time . They also forget which medicine one should take at that particular time. And it is difficult for doctors/caretakers to monitor The patients around the clock.

3.Ideation phase & Proposed solution

3.1 Empathy map



3.2 Ideation & Brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare

🕒 1 hour to collaborate

👤 2-8 people recommended

🗨️ Share template feedback

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) ➔

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

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Key rules of brainstorming

To run an smooth and productive session:

Stay in topic.

Encourage wild ideas.

Defers judgment.

Listen to others.

Go for volume.

If you can, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Shalk Kamloons

Adding multiple features like stress level monitoring, heart rate and temperature

Enabling voice assistant based services

Subhashri K S

Camera associated with the device to read and give inputs of the names of the complex medicine names

Adding music options to make people feel relaxed at times

Sofia B

Specifications of the medicine taken before and after food has to be clearly mentioned

An improvement ratio after taking the medicines will be observed

Varshinie Sagarikaa MS

Adding a Translator as everyone is not very comfortable with English for voice commands

Providing the importance of the specific drug mentioned

3

Group Ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

Providing importance and specifications of the prescribed medicines mentioned as the dosage to be taken

Enabling voice assistant and translator based services for better usage

Relaxing features like music and positive affirmations can be provided

Features like stress and heart rate monitoring and other parameters that aid in maintaining good health

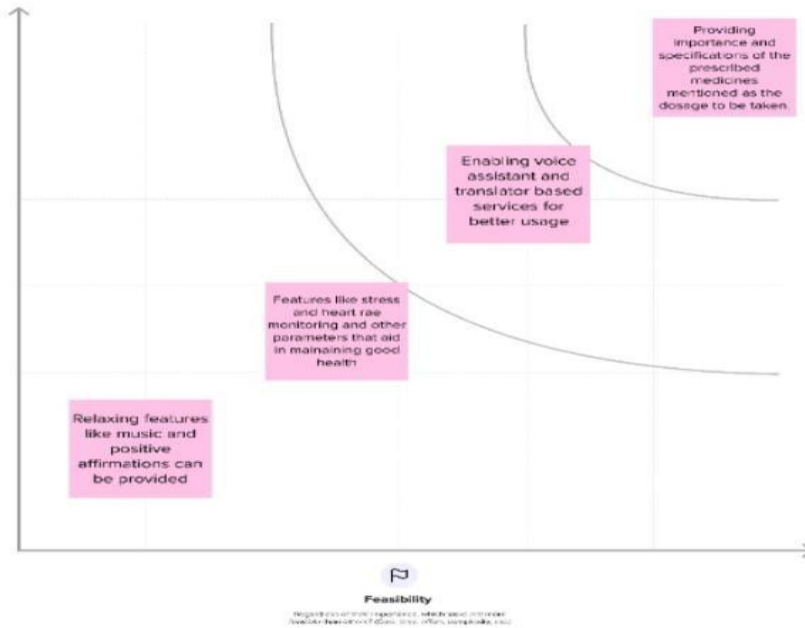
Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes



5

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

1

Share the mural

Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

2

Export the mural

Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward



Strategy blueprint

Define the components of a new idea or strategy.

[Open the template →](#)



Customer experience journey map

Understand customer needs, motivations, and obstacles for an experience.

[Open the template →](#)



Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.

[Open the template →](#)

🔗

[Share template feedback](#)

3.3Proposed Solution

S.No	Parameter	Description
1.	Problem Statement	Most of the time due to number of work for the people as well as regarding age and some disease which leads to forget the basic things among daily routine. If the patient sufferings from the disease where it is compulsory to take medicine at proper time, in this paper we have review the technology of home health care system among them a medicine reminder system and some improvement regarding authentication have well focused.

2.	Idea	<p>Effective Medication Reminder ideas for Seniors who are self reliant</p> <ol style="list-style-type: none"> 1.Build a Morning or Bedtime Routine. 2.Set Up Timed Reminders. 3.Wear a Trendy Reminder Device. 4.Take Meds With Your Meals. 5.Make Medicine Bottle Labels. 6.Find Pill Sorting Services. 7.Get Reminders via Mobile App. 8.Set Up Smart Home Reminders.
3.	Novelty	<p>A pill reminder is any device that reminds users to take medications. Traditional pill reminders are pill containers with electric timers attached, which can be preset for certain times of the day to set off an alarm.</p>

4.	Social Impact	<p>This Medicine remainder had a positive impact on the health and social well-being of seniors who are self reliant many direct and indirect benefits were identified. Both patients and carers had positive attitudes towards using the device. Self-reported benefits included: reminders for medications and appointments improved adherence and disease control; increased independence and productivity; and for those living alone, the device helped combat their loneliness and low mood</p>
5.	Business Model (Revenue Model)	<p>Through the devices We gain revenue from selling the medicine remainder system to hospitals,medical health centre and even in old age homes and also gain profit by having partnership with pharmaceutical Companies.</p>

6.	Scalability of the solution	As the model is integrated with cloud software,we can update the user experience without reinstalling a model and the person can keep a reminder up to the year.
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3.4Problem Solution Fit

Define CS, fit into C	<p>1. CUSTOMER SEGMENT(S)</p> <p>A segmentation of the senior market is presented based on two dichotomous variables: social and professional activity/inactivity. The resulting four groups are labeled socially active employees, socially passive employees, socially active retirees and socially passive retirees.</p> <p>CS</p>	<p>6. CUSTOMER CONSTRAINTS</p> <p>technologies such as patient tracking and smart home devices can automate tasks and processes to support seniors. Implementing IoT devices, such as wearables, telemedicine and smart home devices, can bring peace of mind to families and loved ones and safer living conditions for seniors.</p> <p>RC</p>	<p>5. AVAILABLE SOLUTIONS</p> <p>By leveraging Innominds' advanced connected devices services, they were able to monitor living patterns to track normal activity patterns, monitor overall health based on the patterns as well as anomalies, and send notifications to the caregivers whenever the rule is triggered.</p> <p>BE</p>	Explore AS, differentiate
Focus on J&P, tap into BE, understand RC	<p>2. JOBS-TO-BE-DONE / PROBLEMS</p> <ul style="list-style-type: none"> Privacy of Data. Privacy is the biggest challenge with IoT, as all the connected devices transfer data in real-time. Personal data can be hacked if this end to end connection is not secure. ... Accuracy. Accuracy issues may come due to handling such massive data in real-time. Cost. 	<p>9. PROBLEM ROOT CAUSE</p> <p>Most IoT devices lack end-to-end secure connection and adherence to data security protocols and standards. Ambiguity around regulation makes data more susceptible to cybercriminals that can hack into systems to steal sensitive health information.</p> <p>RC</p>	<p>7. BEHAVIOUR</p> <p>Improving Your Mental and Physical Well-Being Another benefit of technology for seniors is that it can help improve cognition and memory skills. There are several online "brain games" that can help seniors stay mentally sharp.</p> <p>BE</p>	Focus on J&P, tap into BE, understand RC

Identify	3. TRIGGERS IoT enables healthcare professionals to be more watchful and connect with the patients proactively. Data collected from IoT devices can help physicians identify the best treatment process for patients and reach the expected outcomes. TR	10. YOUR SOLUTION IoT devices can help make independent senior living safer. For example, you or your caregiver could opt to install a motion sensor that alerts a responder if no movement's been detected over a long period of time. This means help will arrive faster after a fall or illness. SL	8. CHANNELS of BEHAVIOUR IoT enables companies to automate processes and reduce labor costs . It also cuts down on waste and improves service delivery, making it less expensive to manufacture and deliver goods, as well as offering transparency into customer transactions. CH
Identifying Strong TR & EM	4. EMOTIONS: BEFORE / AFTER IoT can automate the workflow of patient care by using healthcare mobility solutions. Data movement, machine-to-machine communication and interoperability have made healthcare sectors more productive. With the integration of IoT, patients and healthcare professionals can save time. EM		

4.1 Functional Requirements:

FR NO.	Functional requirements	Sub requirements
FR-1	User registration	Registration has been done through the form in our Application.
FR-2	User confirmation	Confirmation has been done within our Application.
FR-3	Data Management	All the data's are stored in the cloud and retrived when it is needed
FR-4	Internet Connectivity	Users should have a stable internet connection to access the Application.
FR-5V	User Input management	All the user's data are gotten with the help of a text field in the dashboard in the app

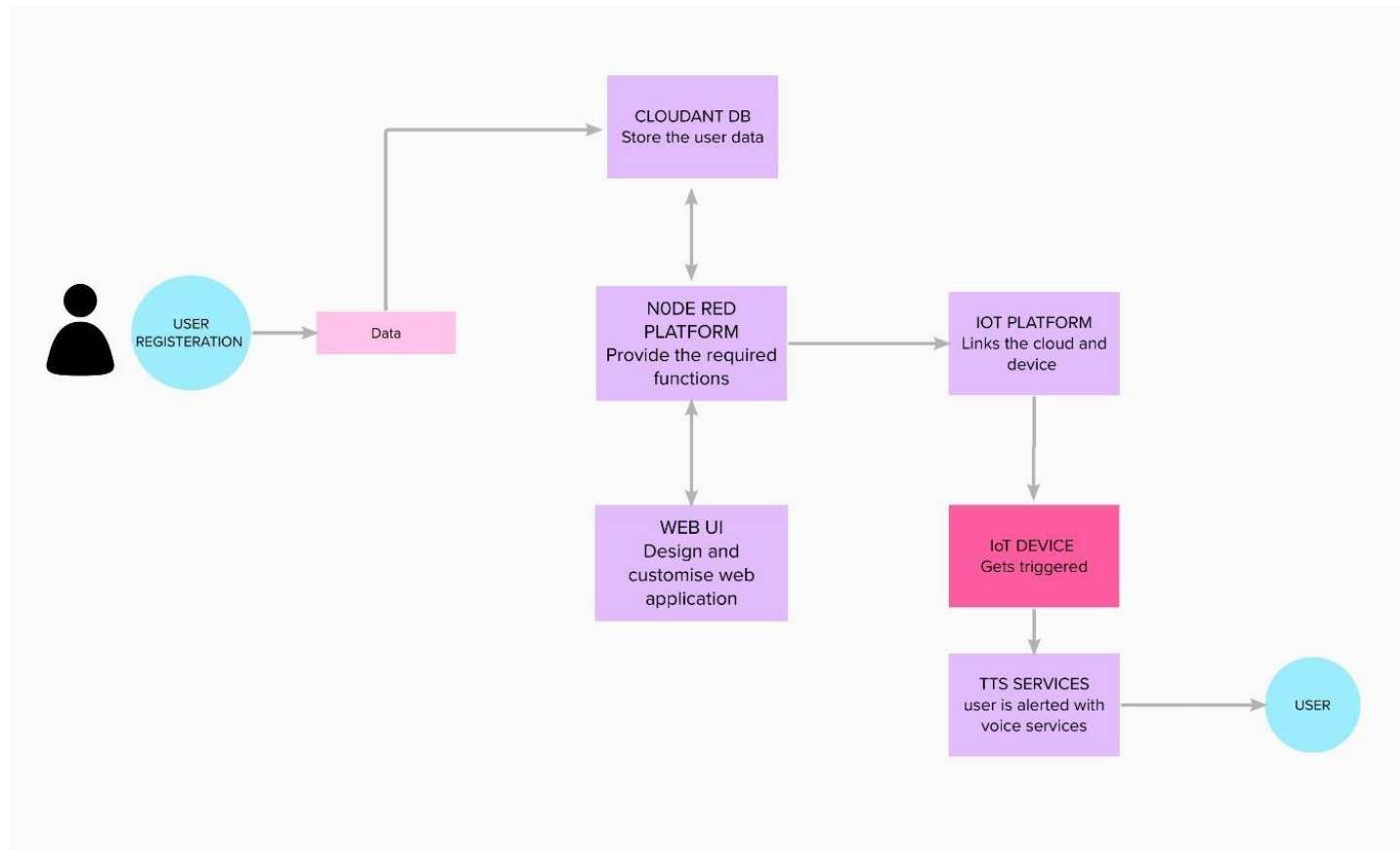
FR-6V

Acknowledgement

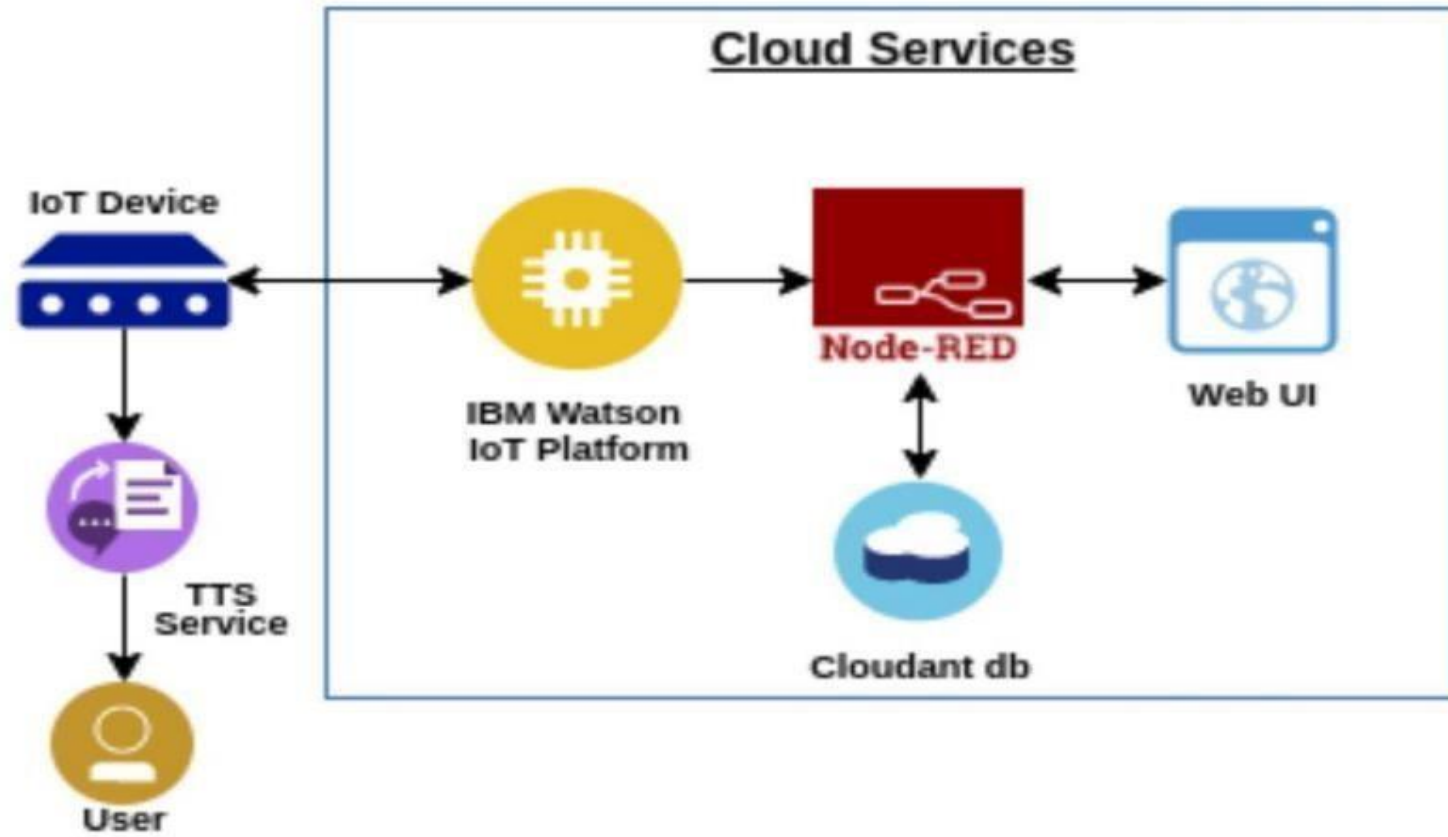
All the data are stored in the cloud via the app
and acknowledgment will be given to the user.

5.Project Design

5.2DataFlowDia



5.2 Technical architecture



6.Sprint Planning And Schedule

6.1 Sprint Delivery Schedule

Sprint	Functional Requirement (Epic)	User Story Number U	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 my password.	2	High	A.Amala Hershini S.Diana N.Ajasha K.Abisha
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	A.Amala Hershini S.Diana N.Ajasha K.Abisha

Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	A.Amala Hershini S.Diana N.Ajasha K.Abisha
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	A.Amala Hershini S.Diana N.Ajasha K.Abisha
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	A.Amala Hershini S.Diana N.Ajasha K.Abisha
	Dashboard					

6.2 Tracker, Velocity & Burndown Chart

Sprint	Total Story	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)

Sprint-1	20	6 Days	2 Nov 2022	8 Nov 2022	20	29 Oct 2022
Sprint-2	20	6 Days	4 Nov 2022	10 Nov 2022		
Sprint-3	20	6 Days	07 Nov 2022	13 Nov 2022		
Sprint-4	20	6 Days	12 Nov 2022	18 Nov 2022		

7. Testing

ProjectsConnectBuildSettingsHelpMy ProjectsView TrashGuideReport an IssueEnglishavinash.501913@sxcce.edu.in

PersonalassistantScreen1Add Screen...Remove ScreenPublish to GalleryDesignerBlocks

Search Components...

User Interface

ButtonCheckBoxDatePickerImageLabelListPickerListViewNotifierPasswordTextBoxSliderSpinnerSwitchTextBoxTimePickerWebView

LayoutMediaDrawing and AnimationMapsChartsSensorsSocialStorageConnectivityLEGO MINDSTORMSExperimentalExtension

Viewer

☐ Display hidden components in ViewerPhone size (505,320)

Non-visible componentsNotifier1

Components

Screen1Label3Image1HorizontalArrangement1Label1TextBox1HorizontalArrangement3Label2PasswordTextBox1Button1Notifier1

RenameDelete

Media

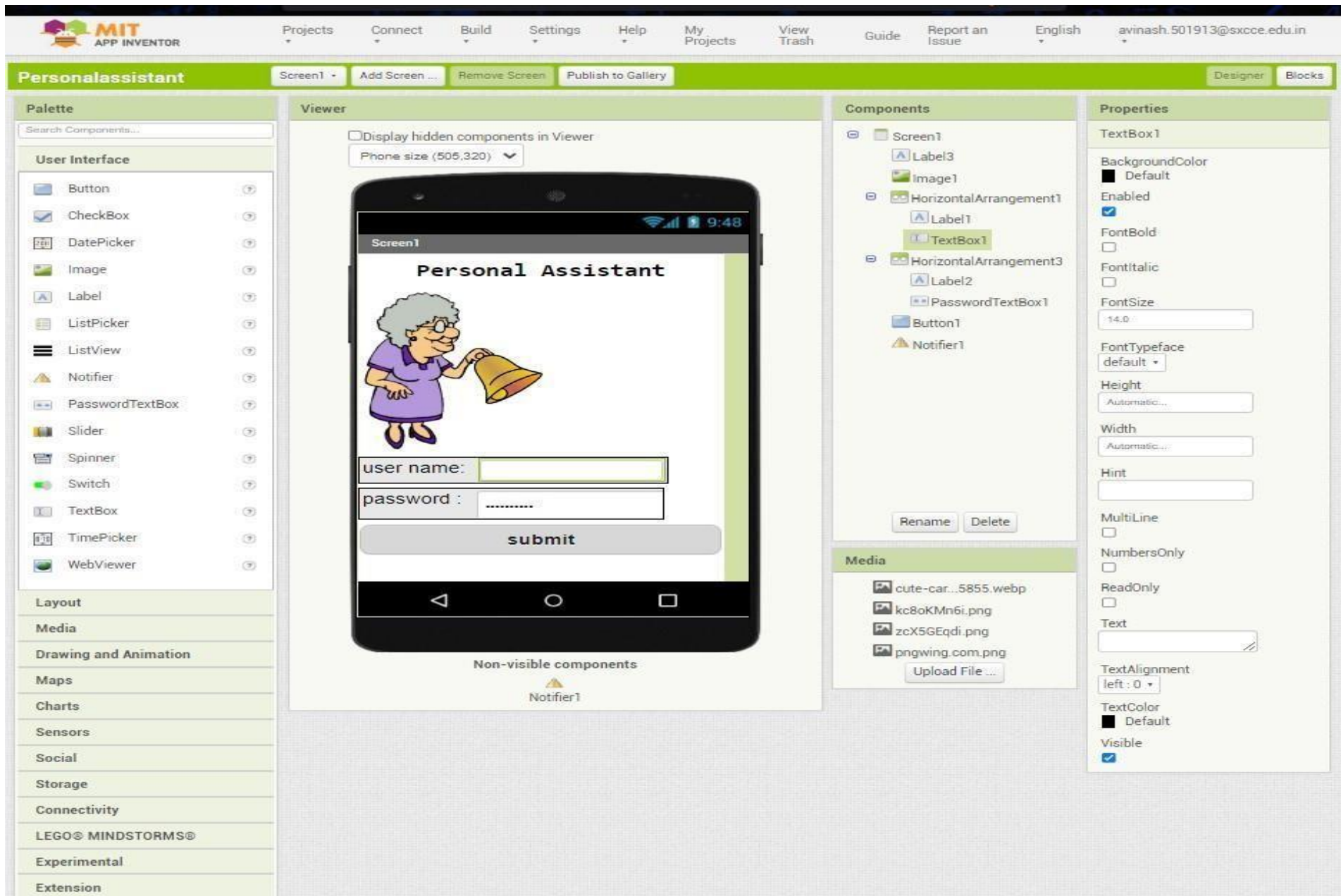
cute-car...5855.webpkc8oKMn6i.pngzcX5GEqdi.pngpngwing.com.png

Upload File...

Properties

TextBox1

BackgroundColorDefaultEnabled☑FontBold☐FontItalic☐FontSize14.0FontTypefacedefaultHeightAutomatic...WidthAutomatic...HintMultiLine☐NumbersOnly☐ReadOnly☐TextTextAlignmentleft: 0TextColorDefaultVisible☑



8.Conclusion

Thus, the Project offers the elderly people, a personal assistant which helps to remind them to consume medicine at the particular time. By which skipping medicine can be avoided.

9.Future Work

The project can be further developed by bringing into the feature of informing the medicine name during the notification. The voice assistance which is given can be customized by adding the user's voice or the caretaker's voice. Further the mobile application can update medicines by taking voice commands as an input from the user.

10.Reference

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De Hana, Geert, Olivier Blankson Henchman's, and Amy Ahluwalia. "Personal assistants for healthcare treatment at home." In Proceedings of the 2005 annual conference on European association of cognitive ergonomics, pp. 225-231. 2005.

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Ahmed, Saleh, Mahboob Qasim, Rizka Wakhidatus Sholikah, and Yasuhiko Morimoto. "Early dementia detection through conversations to virtual personal assistant." In 2018 AAAI Spring Symposium Series. 2018.