IOT BASED SMART CROP PROTECTION

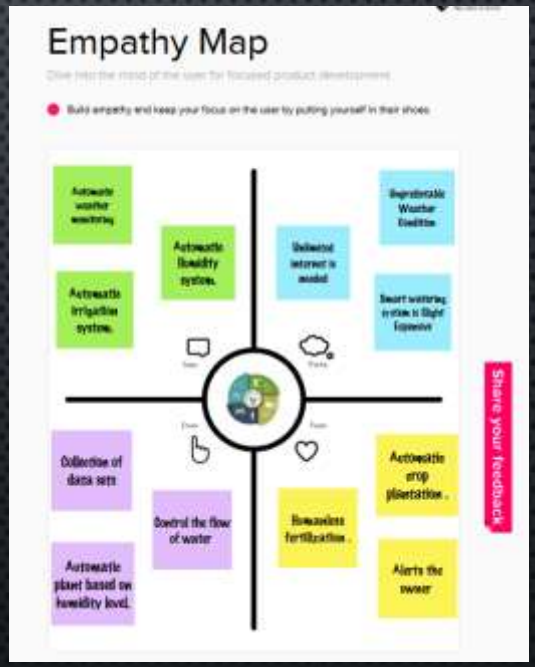
AJAY KUMAR B

HARIHARAN B

DINESH RAJ R

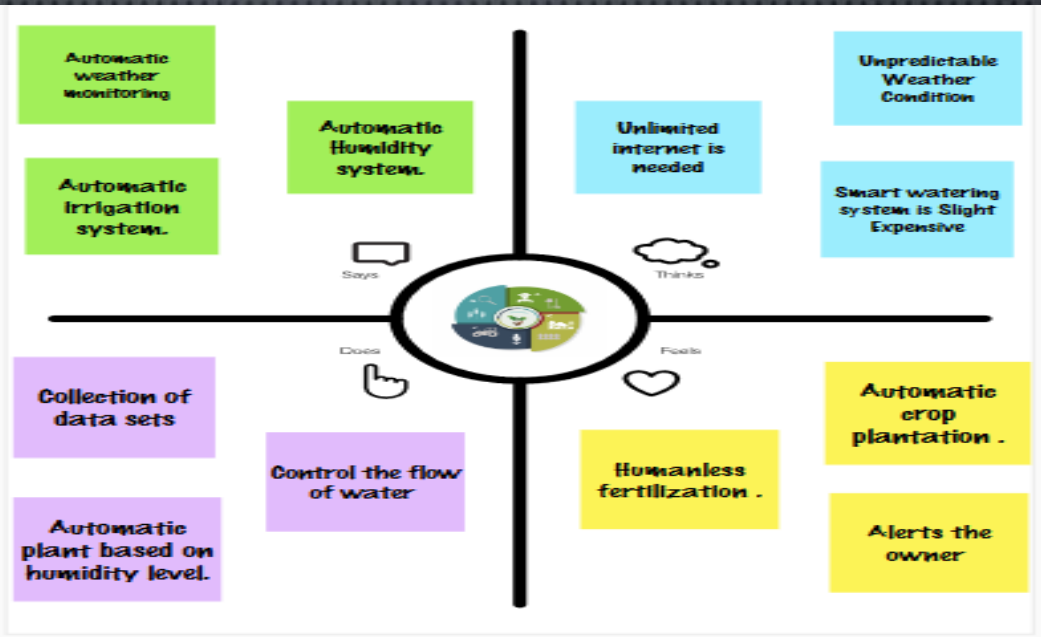
EZHILNILAVAN M

EMPATHY MAP

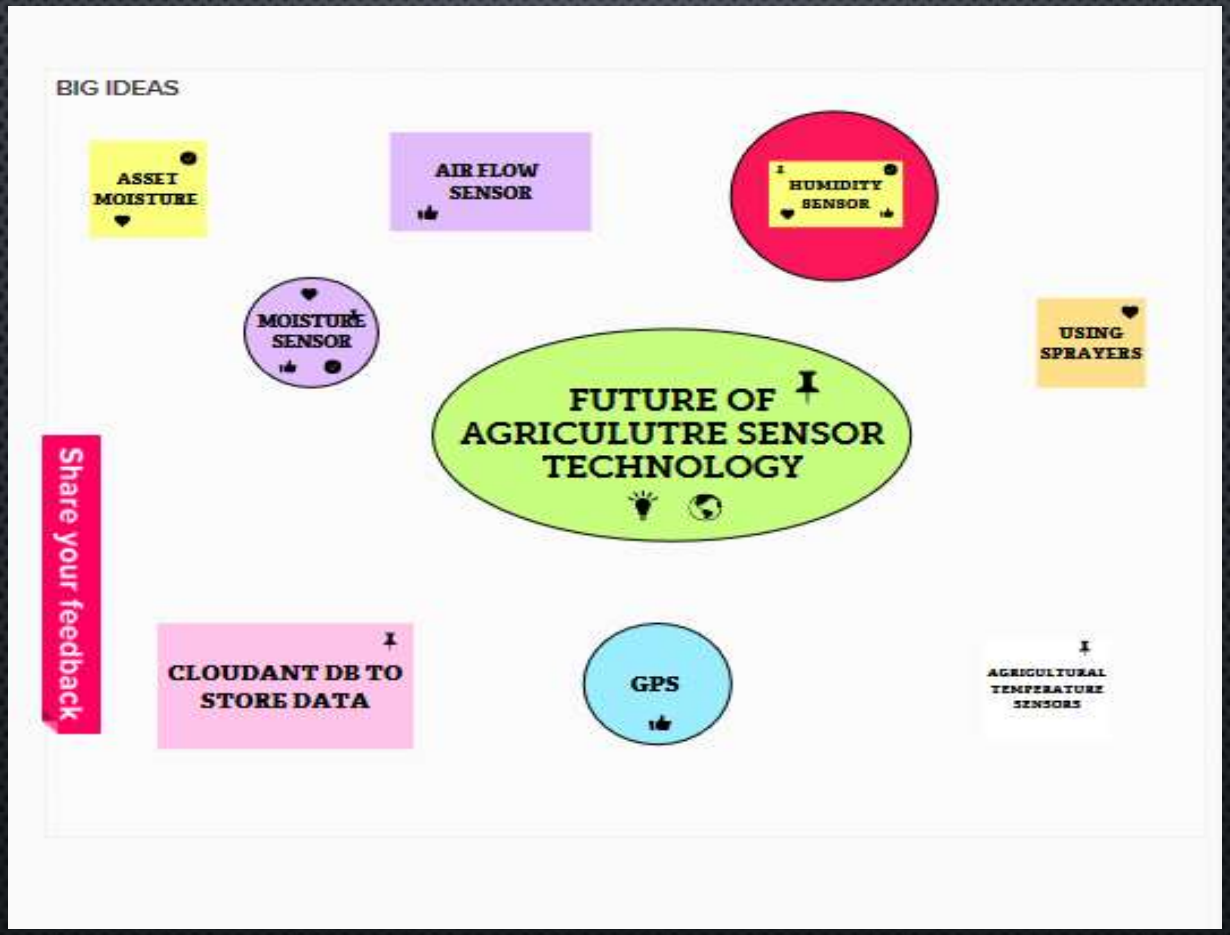

Empathy Map
Automatic irrigation system.
Automatic humidity system.
Collection of data sets
Control the flow of water
Automatic plant based on humidity level.
Automatic crop plantation.
Alerts the owner
Share your feedback

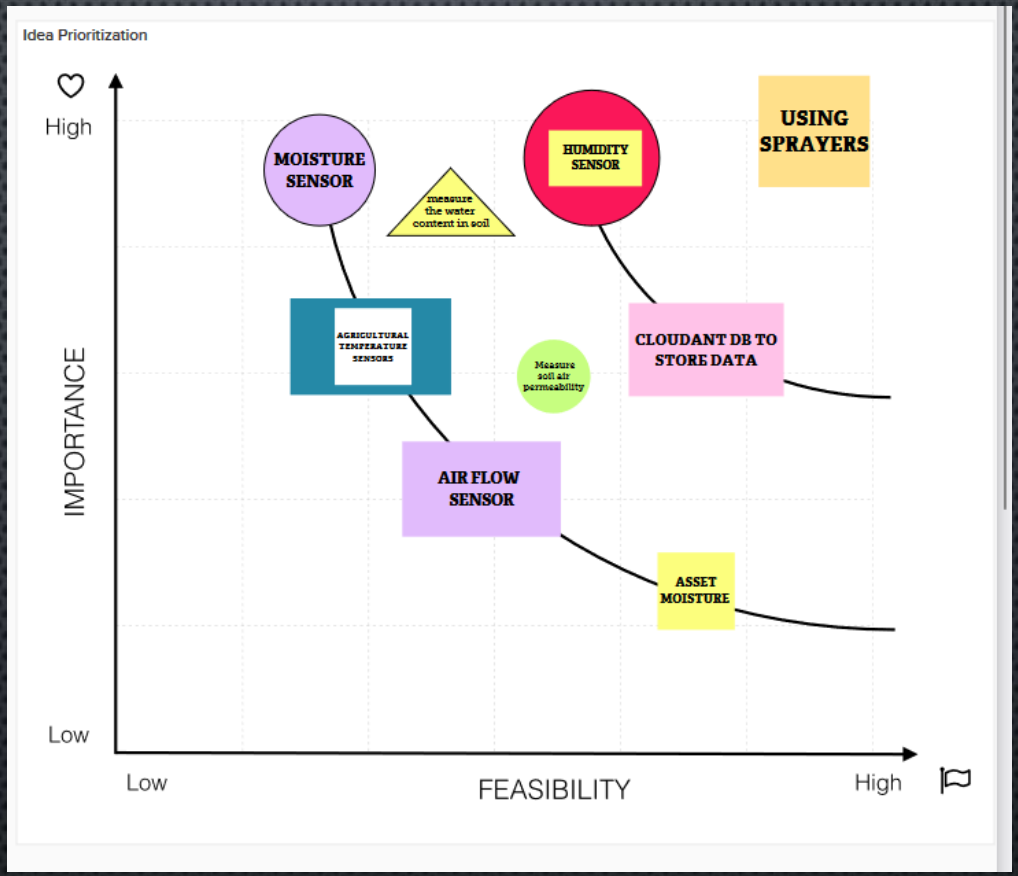
IDEATION PHASE

SNO	NAME	POSITION	COLLEGE
1	AJAY KUMAR B	TEAM LEADER	K.RAMAKRISHNAN COLLEGE OF ENGINEERING
2	DINESH RAJ R	TEAM MEMBER 1	K.RAMAKRISHNAN COLLEGE OF ENGINEERING
3	HARIHARAN B	TEAM MEMBER 2	K.RAMAKRISHNAN COLLEGE OF ENGINEERING
4	EZHIL NILAVAN M	TEAM MEMBER 3	K.RAMAKRISHNAN COLLEGE OF ENGINEERING



Share your feedback


BIG IDEAS
ASSET MOISTURE
AIR FLOW SENSOR
HUMIDITY SENSOR
MOISTURE SENSOR
USING SPRAYERS
FUTURE OF AGRICULUTRE SENSOR TECHNOLOGY
Share your feedback
CLOUDANT DB TO STORE DATA
GPS
AGRICULTURAL TEMPERATURE SENSORS


Idea Prioritization
High
IMPORTANCE
Low
Low
FEASIBILITY
High
MOISTURE SENSOR
measure the water content in soil
HUMIDITY SENSOR
USING SPRAYERS
AGRICULTURAL TEMPERATURE SENSORS
Measure soil air permeability
CLOUDANT DB TO STORE DATA
AIR FLOW SENSOR
ASSET MOISTURE

LITERATURE SURVEY

S.NO	AUTHOR	TITLE		DESCRIPTION
1	Priyanka Deotale; Prasad Lokul	**Smart IoT Monitoring System for Agriculture with Predictive Analysis**		Internet of Things (IoT) advances is frequently used insmart farming to emphasize the standard of agriculture . This project work contains various sorts of sensors, controllers in addition to positioner on behalf of WSN and ARM Cortex-A board which consumes 700mA or 3W power is the main temperament of the classification. Different sensors like DHT 11 Humidity & Temperature Sensor, PIR Sensor, LDR sensor, HC-SR04 Ultrasonic Sensor and cameras are interfaced with the board

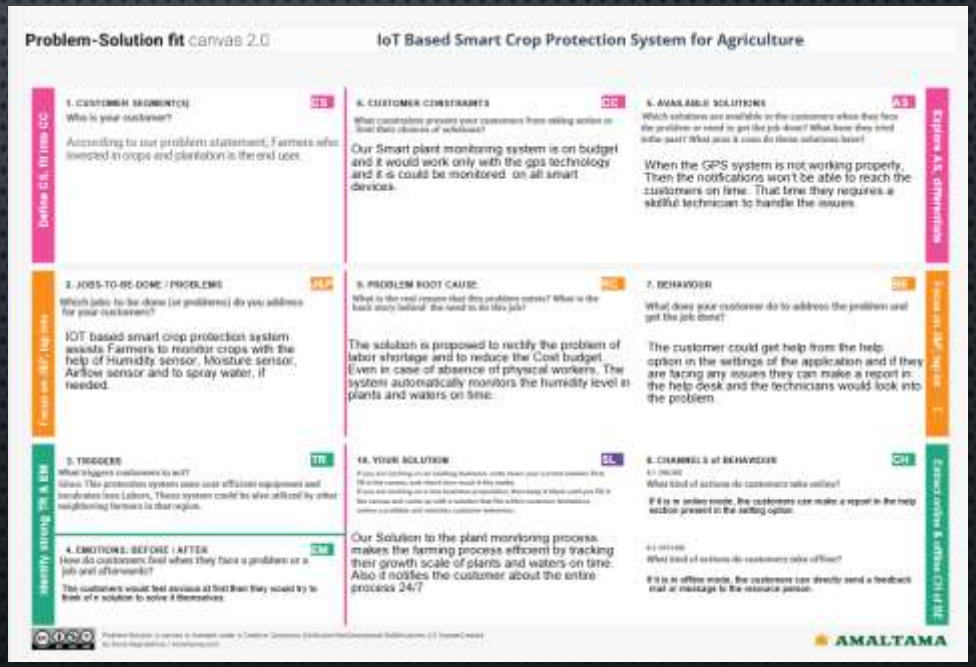
2	**N S Gogul Dev; K S Sreenesh; P K Binu**	**Automated Crop Protection System**		**Low productivity of crops is one of the main problems faced by the farmers in our country. This can be because of two main reasons. Crops destroyed by wild animals and because of bad weather condition. This paper provides a solution to the destruction of crops by animals.**
3	Ipseeta Nanda; Chadalavada Sahithi; Medepalli Swath; Suman Maloji; Vinod Kumar Shukla	IOT Based Smart Crop Protection and Irrigation System		In this project, it requires blynk application software on the smartphone and hardware implementation which can detect the condition of the plant by using the dht 11 sensor and moisture level sensor. The findings of this paper are based on the experiments that were done. The first two experiments were between smart irrigation and normal irrigation.

4	**Anjana M, Charan Kumar A, Monisha R,**	**IOT in Agricultural Crop Protection and Power Generation**		**The paper is to present an internet of things (IOT) based smart irrigation system to identify the dampness in the soil and to control the watering of the crops automatically. The primary motivation behind the ventures to keep up soil dampness level so that there is no damage to the harvests. Soil dampness sensors fundamentally utilized for estimating the gauge volumetric water content**
5	R. M. Joany; E. Logashanmugam; E. Anna Devi; S. Yogalakshmi; L. Magthelin Therase;	IoT based Crop Protection System during Rainy Season.		Irrigation is one of the traditional practice and involves higher percentage of laboursin daily agriculture sector. To water the plants automatically, sensors and Microcontrollers are available to determine when the plants needs water.

6	**J. Karpagam; I.Infranta Merlin; P. Bavithra; J. Kousalya**	**Smart Irrigation System Using IoT**		**India has a population of more than a billion and its requirement for water increases each year as the demand for food increases hence management of water resources to sustain this massive population is of high importance. The agricultural sector, an important sector of our economy accounts for a good percentage of our nation's GDP and of the exports. With advancement in technology we can establish a system that automates the irrigation process such that there is efficient usage of water and create an ease of work load for the farmers.**
7	M Monica; B. Yeshika; G.S Abhishek; H.A Sanjay; Sankar Dasiga	IoT based control and automation of smart irrigation system: An automated irrigation system using sensors, GSM, Bluetooth and cloud technology		In the field of agriculture, precision agriculture is one of the most crucial aspects of countries with enormous populations, fertile land and water resources. Incorporation of smart irrigation will go a long way in enabling the countries to effectively and efficiently use the available water, further using the extra water for the barren lands.

8				
	Yogesh kumar Jayam; Venkatesh Tunuguntla; Sreehari J B; S Harinarayanan	Smart Plant Managing System using IoT		IOT plays a major role in agricultural field This paper is mainly applied to agricultural field Smart irrigation and farming can help farmers to grow healthy plants. The existing system only checks the soil water stress and automates the process of watering. The paper is about IOT based smart farming and irrigation system. The ultimate agenda of this paper is to automate the process of watering to plants

PHASE DESIGN 1
SOLUTION FIT



Problem-Solution fit canvas 2.0

IoT Based Smart Crop Protection System for Agriculture

1. CUSTOMER SEGMENT(S) — CS
Who is your customer?

According to our problem statement, Farmers who invested in crops and plantation is the end user.

6. CUSTOMER CONSTRAINTS — CC
What constraints prevent your customers from taking action or limit their choices of solutions?

Our Smart plant monitoring system is on budget and it would work only with the gps technology and it is could be monitored on all smart devices.

5. AVAILABLE SOLUTIONS — AS
Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have?

When the GPS system is not working properly, Then the notifications won't be able to reach the customers on time. That time they requires a skillful technician to handle the issues.

Explore AS, differentiate

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
Which jobs-to-be-done (or problems) do you address for your customers?

IOT based smart crop protection system assists Farmers to monitor crops with the help of Humidity sensor, Moisture sensor, Airflow sensor and to spray water, if needed.

9. PROBLEM ROOT CAUSE — RC
What is the real reason that this problem exists? What is the back story behind the need to do this job?

The solution is proposed to rectify the problem of labor shortage and to reduce the Cost budget. Even in case of absence of physical workers. The system automatically monitors the humidity level in plants and waters on time.

7. BEHAVIOUR — BE
What does your customer do to address the problem and get the job done?

The customer could get help from the help option in the settings of the application and if they are facing any issues they can make a report in the help desk and the technicians would look into the problem.

Focus on J&P, tap into BE

3. TRIGGERS — TR
What triggers customers to act?

Ideas: The protection system uses cost efficient equipment and introduces less Labors, These system could be also utilized by other neighboring farmers in that region.

4. EMOTIONS: BEFORE / AFTER — EM
How do customers feel when they face a problem or a job and afterwards?

The customers would feel anxious at first then they would try to think of a solution to solve it themselves.

10. YOUR SOLUTION — SL
If you are looking at an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviours.

Our Solution to the plant monitoring process makes the farming process efficient by tracking their growth scale of plants and waters on time. Also it notifies the customer about the entire process 24/7

8. CHANNELS of BEHAVIOUR — CH
What kind of actions do customers take online?

If it is in online mode, the customers can make a report in the help section present in the setting option.

What kind of actions do customers take offline?

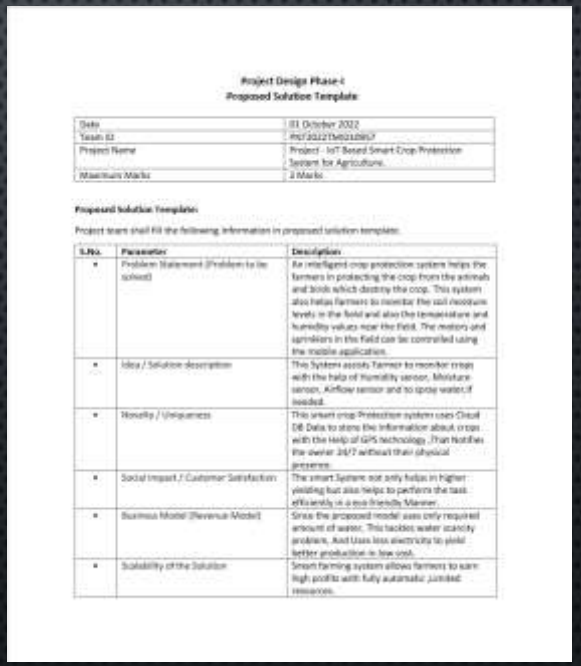
If it is in offline mode, the customers can directly send a feedback mail or message to the resource person.

Identify strong TR & EM

Extract online & offline CH of BE

AMALTAMA

PROPOSED SOLUTION



Project Design Phase-I
Proposed Solution Template

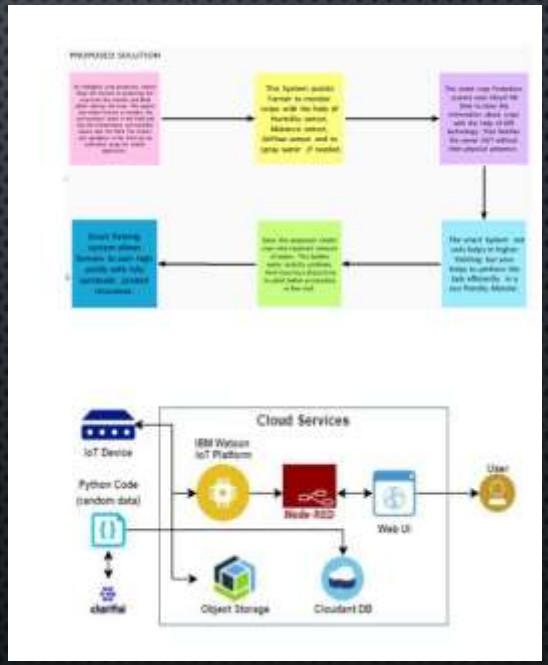
Date	01 October 2022
Team ID	PNT2022TMID32957
Project Name	Project - IoT Based Smart Crop Protection System for Agriculture.
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
•	Problem Statement (Problem to be solved)	An intelligent crop protection system helps the farmers in protecting the crop from the animals and birds which destroy the crop. This system also helps farmers to monitor the soil moisture levels in the field and also the temperature and humidity values near the field. The motors and sprinklers in the field can be controlled using the mobile application.
•	Idea / Solution description	This System assists Farmer to monitor crops with the help of Humidity sensor, Moisture sensor, Airflow sensor and to spray water if needed.
•	Novelty / Uniqueness	This smart crop Protection system uses Cloud DB Data to store the information about crops with the Help of GPS technology ,That Notifies the owner 24/7 without their physical presence.
•	Social Impact / Customer Satisfaction	The smart System not only helps in higher yielding but also helps to perform the task efficiently in a eco friendly Manner.
•	Business Model (Revenue Model)	Since the proposed model uses only required amount of water, This tackles water scarcity problem, And Uses less electricity to yield better production in low cost.
•	Scalability of the Solution	Smart farming system allows farmers to earn high profits with fully automatic justified resources.

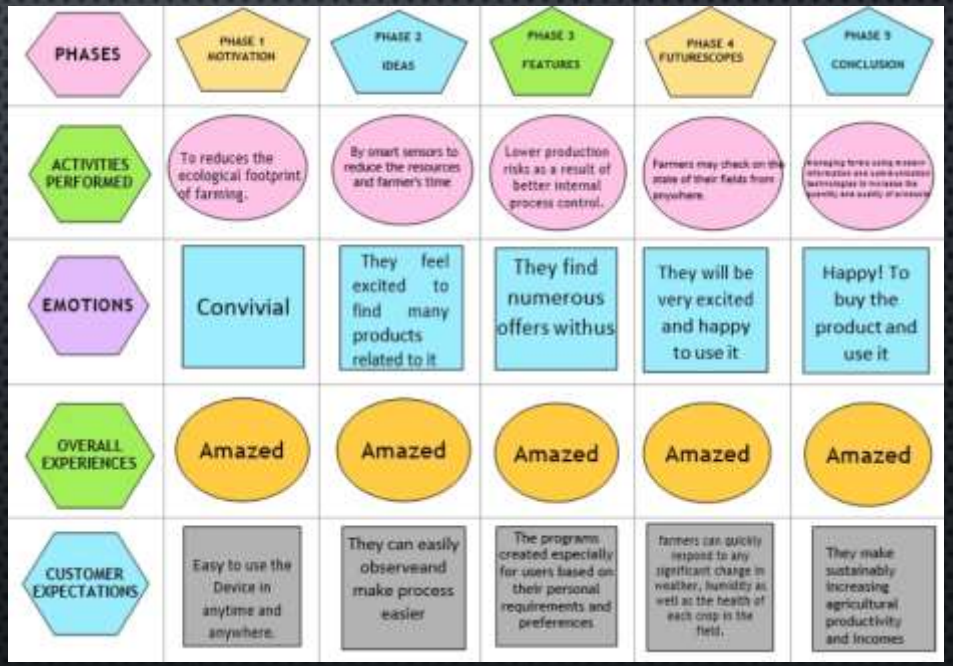
ARCHITECHTURE



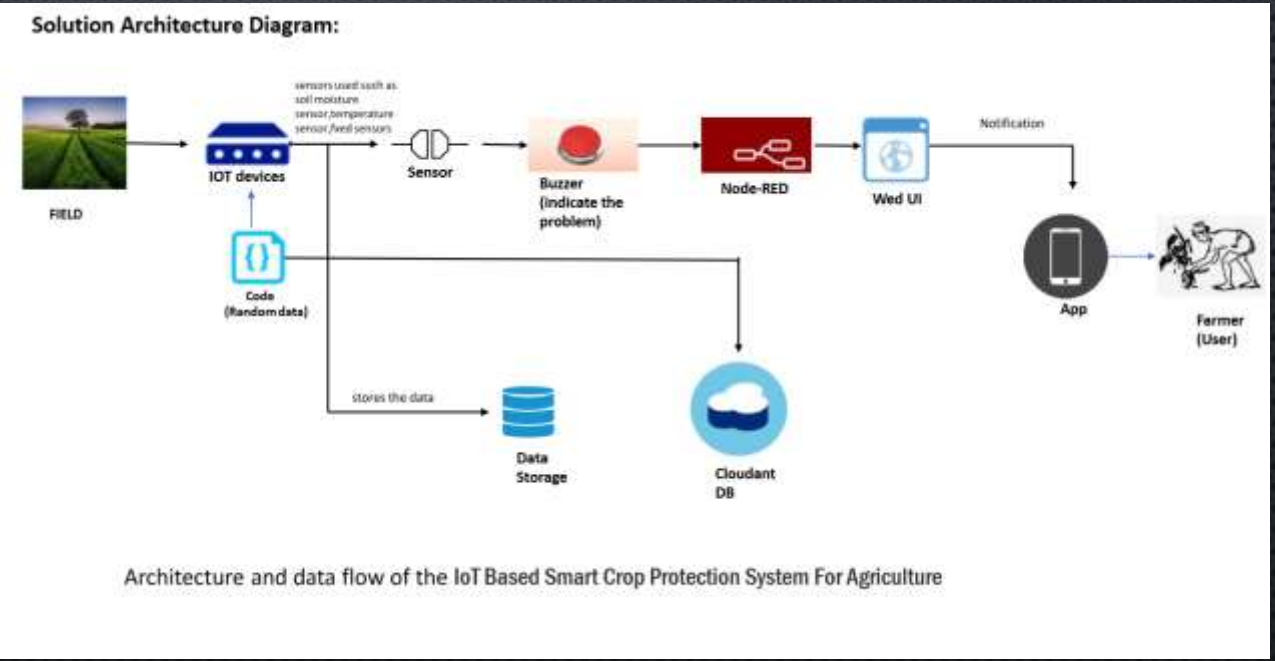
PHASE DESIGN 2

- CUSTOMER JOURNEY MAP
- TECHNOLOGY ARCHITECHTURE
- FUNCTIONAL REQUIREMENT
- DATA FLOW DIAGRAM

CUSTOMER JOURNEY MAP



TECHNOLOGY ARCHITECHTURE



FUNCTIONAL REQUIREMENTS

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP

FR-3	User Delivery	Product will be delivered to registered addresses before time
FR-4	User Payment	Pay via UPI/Net Banking Pay via Amazon pay later Pay via Debit/Credit/ATM card Pay via cash on delivery
FR-5	User Feedback	Can give feedback at the purchased platform

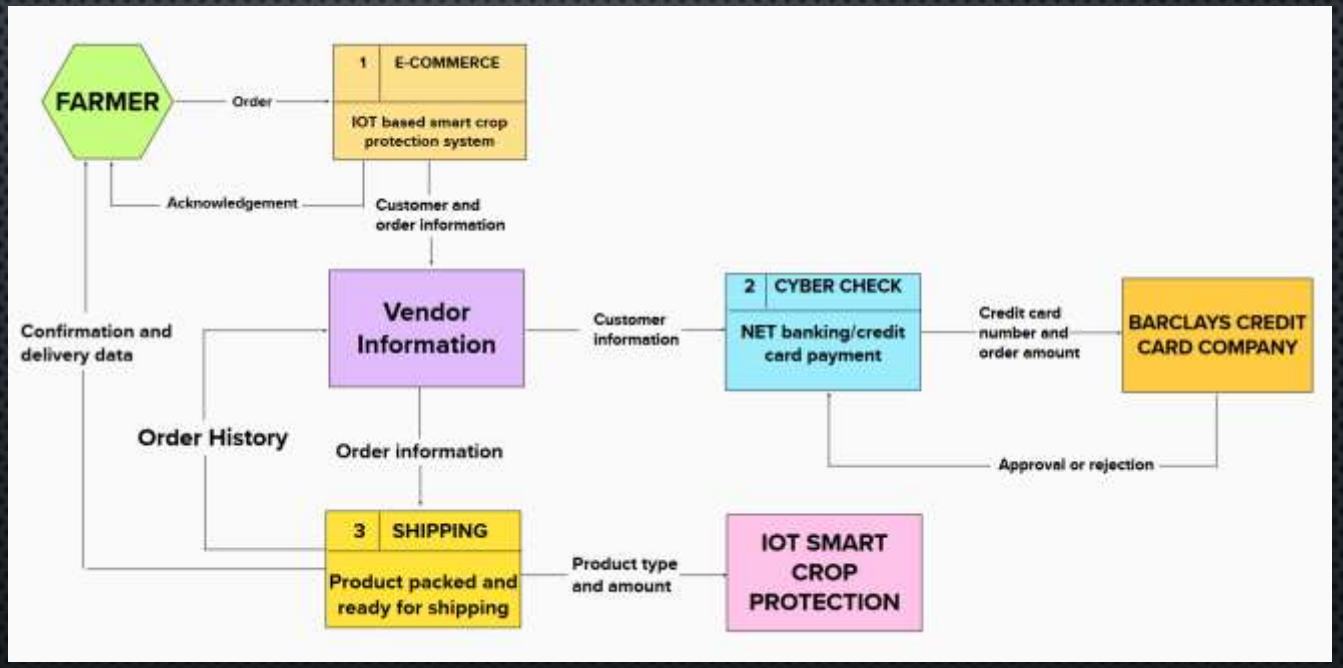
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-6	**Product Feedback**	Through Webpage Through Phone calls Through Google forms

NON-FUNCTIONAL REQUIREMENTS

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	**Our product usage will be comparatively high in the field areas. It is very usable for further cultivation of crops.**
NFR-2	**Security**	**Our product has the major security, it safeguard the field to utmost level . This makes the crops to be in safer side.**
NFR-3	**Reliability**	**Our product has the secured phase. Its reliability with our customer is purely successive.**

NFR-4	**Performance**	**Its performance will be based on the level of handling it. It provides more options, user can perform it as they want.**
NFR-5	**Availability**	Our product will be available at each and every phase of marketing.
NFR-6	**Scalability**	It emerge as a great solution and a eco friendly in nature.

DATA FLOW MAP



PROJECT PLANING PHASE

TITLE	DESCRIPTION	DATE
Literature Survey& Information Gathering	A Literature Survey is a compilation summary of research done previously in the given topic. Literature survey can be taken from books, research paper online or from any source.	07 October 2022
Prepare Empathy Map	Empathy Map is a visualization tool which can be used to get a betterinsight of the customer	07 October 2022

Ideation- Brainstorming	**Brainstorming is a group problem-solving method that helped us to gather and organize various ideas and thoughts from team members.**	**07 October 2022**
Problem Solution Fit	This helps us to understand the thoughts of the customer their likes,behaviour, emotions etc.	07 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.**	**07 October 2022**
Proposed solution	Proposed solution shows the current solution and it helps is going towards he desired result until it is achieved.	07 October 2022
Solution Architecture	Solution Architecture is a very complex process I.e it has a lot of sub-processes and branches. It helps in understanding the components and features to complete our project.	07 October 2022

Customer journey map	**It helped to analyse the various steps, interactions, goals and motivation, positives, negatives and opportunities.**	**7 October 2022**
Functional requirements	Here functional and nonfunctionalrequirements are briefed. It has specific features like usability, security, reliability, performance, availability and scalability.	12 October 2022

Technology stack	**Technology Architecture is a more well defined version of solution architecture. It helps us analyze and understand various technologies that needs to be implemented in the project.**	**12 October 2022**
Data flow	Data Flow Diagram is a graphical orvisual representation using a standardized set of symbols and notations to describe a business's operations through data movement	12 October 2022

SPRINT DELIVERY PLAN

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 required dataset by entering my email, password, and confirming my password	3	High	Ajay Kumar B

Sprint-2	**Cloud services**	**USN-3**	**As a user, I can register for the application through Facebook or any social media**	**1**	**Low**	**Ezhilnilavan M**
Sprint-3	Login	USN-4	As a user, I can log into the application network by entering email & password	5	High	Ajay Kumar B
Sprint-1	Collecting Dataset	USN-5	To collect various sources ofanimal threats and keep developing a dataset	4	Medium	Hariharan B

Sprint-4	**Integrating**	**USN-6**	**To integrate the available dataset and keep improving the accuracy of finding animals**	**5**	**High**	**R . Dinesh Raj**
Sprint-3	Coding	USN-7	To modify the code according to our program and improve the efficiency of that code	5	High	R. Dinesh Raj
Sprint-1	Planning	USN-8	Plan the programming languageand feasibility	10	High	Hariharan B

PROJECT TRACKER ,VELOCITY AND BURNDOWN CHART

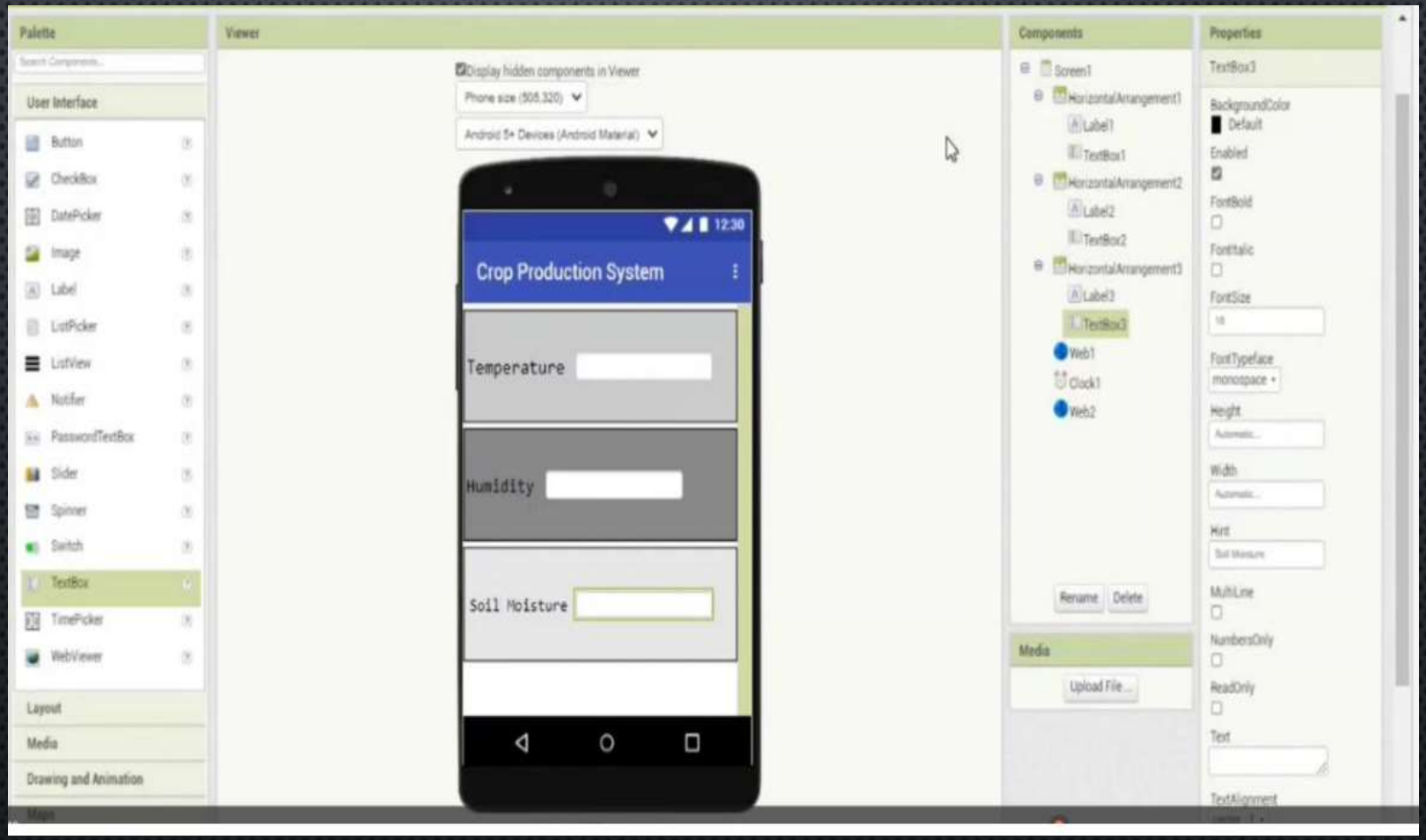
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	05 Nov 2022
Sprint-2	20	6 Days	31 oct 2022	05 Nov 2022	20	08 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	14 Nov 2022

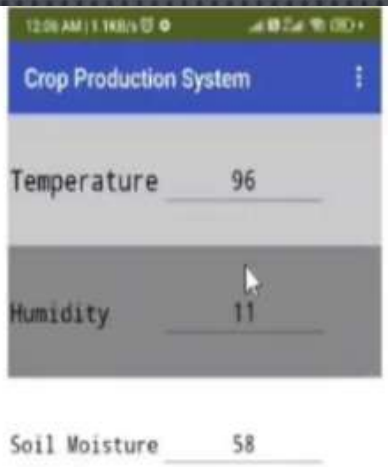
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

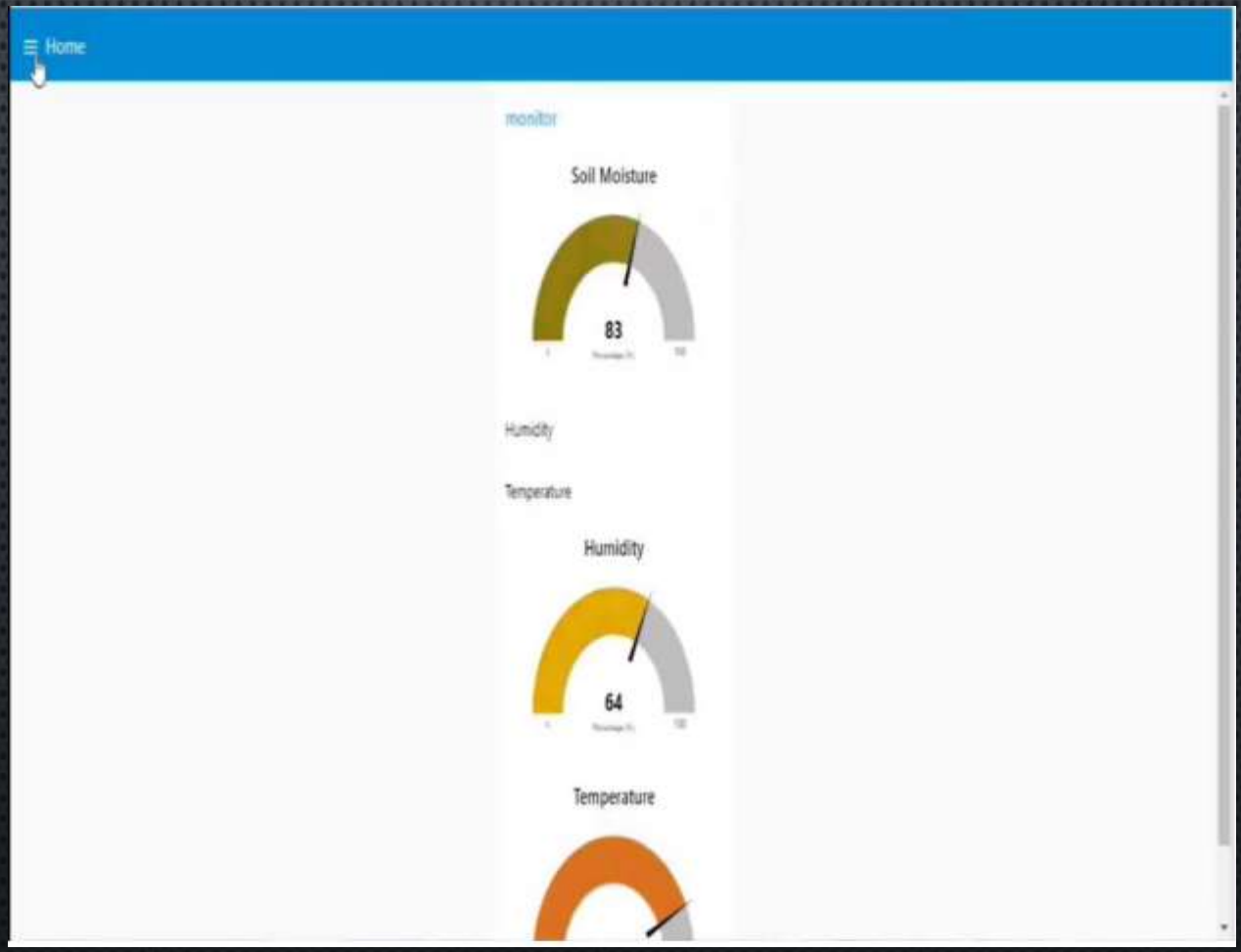
VELOCITY:

- Sprint-1 and Sprint-2

- AV = Sprint Duration / Velocity= 15/7=2.14
- Sprint-3 and Sprint-4
- AV=Sprint Duration / Velocity = 10/6 = 1.6


Palette
Viewer
Components
Properties
User Interface
Button
CheckBox
DatePicker
Image
Label
ListPicker
ListView
Notifier
PasswordTextBox
Slider
Spinner
Switch
TextBox
TimePicker
WebViewer
Layout
Media
Drawing and Animation
Display hidden components in Viewer
Phone size (505,320)
Android 5+ Devices (Android Material)
12:30
Crop Production System
Temperature
Humidity
Soil Moisture
Screen1
HorizontalArrangement1
Label1
TextBox1
HorizontalArrangement2
Label2
TextBox2
HorizontalArrangement3
Label3
TextBox3
Web1
Clock1
Web2
Rename
Delete
Media
Upload File ...
TextBox3
BackgroundColor
Default
Enabled
FontBold
FontItalic
FontSize
FontTypeface
monospace
Height
Width
Hint
MultiLine
NumbersOnly
ReadOnly
Text
TextAlignment


Crop Production System
Temperature
96
Humidity
11
Soil Moisture
58


Home
monitor
Soil Moisture
83
Humidity
Temperature
Humidity
64
Temperature

Thank You