

Ideation Phase

Brainstorm&Idea Prioritization Template


Date	19 September 2022
Team ID	PNT2022TMID33042
Project Name	IOT-Smart farmer
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

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.

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



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

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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

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

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

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

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1


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

PROBLEM

How might we solve the issue in smart farming?



Key rules of brainstorming

To run a smooth and productive session

- Stay in topic.
- Defer judgment.
- Go for volume.
- Encourage wild ideas.
- Listen to others.
- If possible, 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

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Person 1

- monitoring of the climate condition by collecting various data from the environment
- It provided measurements can be used to map the climate conditions.
- use of IoT sensors enables them, to get accurate real time information on green houses condition.
- house conditions such as lighting ,temperature,soil condition and humidity
- weather stations can automatically adjust the condition to match the given parameters
- farmapp and growlink are also IoT agriculture products offering such capabilities among others
- GreenIQ is also an interesting product tht uses smart agriculture sensors
- Soil moisture sensor : they are immersed to specimen soil whose moisture content under test conductivity of soil
- light sensor :it is extremely sensitive in visible light range

Person 2

- with light sensor attached ton the system when the surrounding natural lights are low ,
- light sensor display digital values corresponding to the light intensity
- humidity sensor: humidity sensor is used for sensing the vapour in the air the change in RH(relative humidity)
- advantage of green house farming is maintaining a controlled temperature is crucial
- temperature fluctuations can damage or kill your plants only in few hour
- remote monitoring systems protect valuable plants from extreme temperature fluctuations
- the monitoring and controlling system of the smart greenhouse automation precepts different parameters inside the greenhouse using sensors
- the developed system can be proved profitable as it optimizes the resource in the green house the complete module is of low cost
- some examples of such agriculture IoT devices are IMETEO,Smart Elements and Pyno.

Person 3

- Cattle monitoring and management : Just like crop monitoring, there are IoT agriculture sensors that can be attached to the animals
- Livestock tracking and monitoring help collect data on stock health, well-being, and physical location.
- For example, such sensors can identify sick animals so that farmers can separate them from the herd and avoid contamination
- Precision farming : Also known as precision agriculture, precision farming is all about efficiency and making accurate data-driven decisions
- For example, SCR by Aliffex and Cowlar use smart agriculture sensors (collar tags) to deliver temperature, health, activity, and nutrition
- Using drones for real-time cattle tracking also helps farmers reduce staffing expenses. This works similarly to IoT devices for petcare
- By using IoT sensors, farmers can collect a vast array of metrics on every facet of the field microclimate and ecosystem
- This data enables farmers to estimate optimal amounts of water, fertilizers, and pesticides that their crops need.
- For example, CropIt built IoT soil sensor that measure soil moisture, temperature, and electric conductivity enabling farmers to approach each crop's unique needs individually

Person 4

- Predictive analytics for smart farming : Precision agriculture and predictive data analytics go hand in hand.
- While IoT and smart sensor technology are a gamechangers for highly relevant real-time data, the use of data analytics helps farmers make sense of it and come up with important predictions: crop harvesting time.
- Data analytics tools help make farming, which is inherently highly dependent on weather conditions, more manageable, and predictable
- It also enables farmers to optimize the supply of water and nutrients for each crop and even select yield traits to improve quality.
- Applied in agriculture, solutions like SoftSocor enable farmers to save up to 50% irrigation water, reduce the loss of fertilizers caused by overwatering, and deliver actionable insights regardless of season or weather conditions
- They usually include a number of agriculture IoT devices and sensors,
- installed on the premises as well as a powerful dashboard with analytical capabilities
- IoT: In addition to the latest IoT agriculture use cases, some prominent opportunities include vehicle tracking for event automation, storage management, logistics, etc.

Person 5

- One more type of IoT product is agriculture and another element of precision farming are crop management devices
- Just like weather stations, they should be placed in the field to collect data specific to crop farming from temperature
- you can monitor your crop growth and any anomalies to effectively prevent any diseases or infestations that can harm your yield.
- precision agriculture, precision farming is all about efficiency and making accurate data-driven decisions
- Pest monitoring: Remotely monitor for specific pests to understand their activity, location and patterns
- This can be done using by connecting traps to report specific pest levels
- thus automating monitoring and data collection to take more accurate and quicker countermeasures
- Tracking hyper-local weather conditions can also add context to help predict the size and threat level of pest populations.
- One example is olive plantations looking to combat fruit flies and their larvae, which cause premature falling of the fruit.

Person 6

- Chemical automation: Monitoring pesticide levels on plants over time can help farmers minimize use and maximize results
- If it rains, a farmer may need to apply pesticides more often
- but the impact that a storm has on different areas of a field can lead to over- and under-application of pesticides in different locations
- Generally chemical levels can be monitored using sensors in the soil or above ground near plants
- Crop health monitoring: Compare actual crop growth to projections, taking into consideration weather and other factors to help identify when you may have pests and catch them early
- Monitoring Pest Infestation: Through distant monitoring, a farmer can easily collect information about the presence of insects and rodents
- A farmer can use this dashboard to instantly connect with his fields and manage crop health
- One of the benefits of using IoT in agriculture is the increased agility of the processes.

Person 7

- Field data collection device : Depending on the field requirements, a standalone sensor node or wireless
- Instead, alone scenario field data collection device consists of four sensors: Soil Moisture sensor, Soil temperature sensor, temperature and humidity.
- The output of these sensors is read by an Arduino-Uno, which is connected to Raspberry Pi for logging and storing the data from sensors.
- The developed web service read the forecasted data of the field location and store in the server.
- This web service also aggregates the weather forecasting data like temperature, humidity.
- Web service for online weather data collection :
- Soil moisture prediction algorithm: An algorithm is developed to predict the soil moisture based on field sensors data and weather forecasting
- The algorithm shows information regarding soil moisture of the up coming days
- It also provides irrigation suggestions, based on the defined level of soil moisture and predicted precipitation, to save water and energy

Person 8

- Responsive web based interface for real-time monitoring : A responsive web-based user interface is developed to visualize real-time sensors data.
- It also provides a facility for irrigation scheduling. The user can schedule the irrigation
- Web service to control water motor : A web service is developed to start/stop the water motor.
- The R-Pi send signal to Arduino-Uno that controls the relay switch to start/stop the water motor
- IoT enabled water pump : In this module, a water pump is connected to a relay switch that is controlled by a Wi-Fi enabled node
- The node is controlled by the web service through a trigger from the responsive web based interface for real-time monitoring
- Advantages of IoT based smart irrigation system : The IoT based smart irrigation system avoids over use of water in irrigation,
- The system can be a solution to labor shortage problem in agriculture. Irrigation in crops fields can be operated automatically as well as manually using this system.

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, 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

soil moisture sensor

Soil moisture sensor :
they are immersed to
specimen soil whose
moisture content under
test conductivity of soil
depend on upon
amount of moisture
present it

Humidity sensor

humidity sensor:
humidity sensor is used
for sensing the vapour
in the air the change in
RH(relative humidity)of
the surrounding would
result in display of
values

Pest monitoring

Pest monitoring:
Remotely monitor
for specific pests
to understand
their activity,
location and
patterns.

Crop health monitoring

Crop health monitoring:
Compare actual crop
growth to projections,
taking into
consideration weather
and other factors to
help identify when you
may have pests and
catch them early.

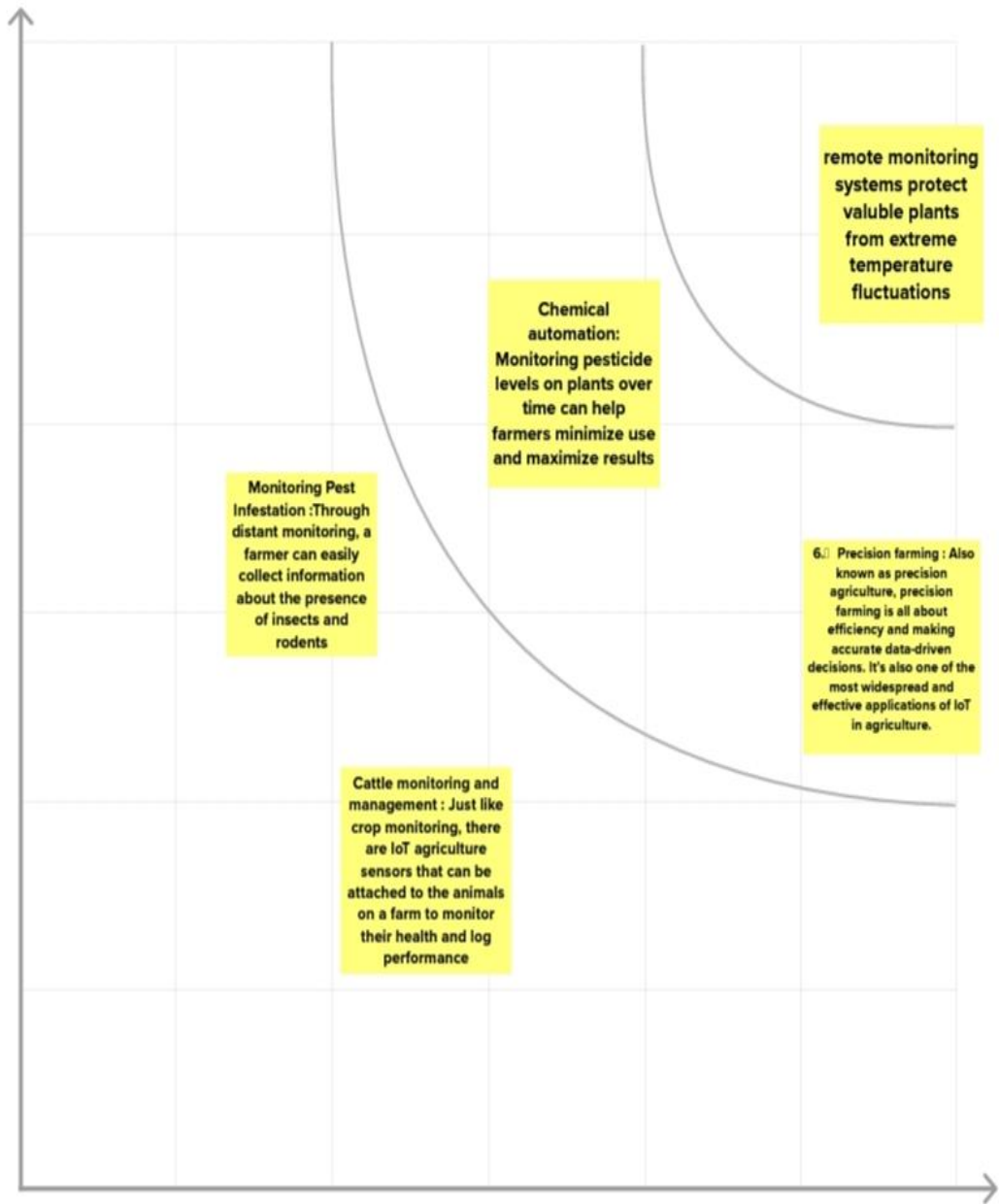
Step-3: Idea Prioritization

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



2

Feasibility

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)