TOUCH IOT WITH SAP LEONARDO

TEMPLATE FOR
SUBMISSION REQUIREMENTS

Template Description
This is a template that can be used for the Prototype Challenge included as part of the openSAP course “Touch IoT with SAP Leonardo.”
Safe and Secure food quality is a major concern for our rapidly blowing planet. The resources are limited but, the population is rising. It is an extreme necessity of time to have smart solutions for better agriculture and safer food.

With this IoT Prototype, I would like to address the significant role which can be played by sensors and machine learning technology, to help evolve a data model in agriculture business. Countries have adapted different techniques in irrigation and plantation which suits their geographical conditions and extreme climate conditions. There are numerous contributions in this area by countries like Brazil and Israel for doing agri-business intelligently. Thinking beyond, we can add and build a complete IoT solution for the farming sector.

Controlled irrigation with perfect blend of fertilizers would save on both Water and Fertilizer volumes for farmers. Direct injection of appropriate mixture of water with solvent fertilizers at the root of a plant is a proven approach. Let us add a sensor (off course- in my concepts) which will sense the humidity, water level, temperature of soil and evaluate permissible levels of fertilizers. This data can be used to control to centralize farming system for variety of crops.

Another important revolution in farming is Biological Pest Control, using breeds of insects and mites. Now think of replacing these insects and mites, with tiny flying particles released from a drone. A drone fitted with image processing software can intellectually decide on How Much and Where to sprinkle the pesticides.

Proposed IoT solutions are easy to implement without too much of infrastructure setup. The agriculture sector will get a significant benefit out of similar ideas of Connected Intelligent Systems.

Let me take you further on this journey for arriving at a best of breed crops, with an even mix of IoT and Farming concepts. I wish there could be something like Internet of Trees, Internet of Fields, and more.. and more...
Persona

Shivajirao Patil
The young generation Farmer

“Being a farmer, I always hunt for producing more from less for more. The Indian agro capabilities are under-utilized, in spite of bundled natural resources. Continuous improvement can boost generation of good quality grains and vegetable for our loved ones.”

About
• Young, energetic and highly enthusiast for trying different farming techniques
• I did my masters course in Agriculture from a renowned collage from Pune, India.
• Traditionally we own a land of 50 acres in a naturally reach land of Maharashtra, India
• We produce green vegetables, sugarcane and fruits like strawberry, pomegranate

Main Goals
• Reduce water consumption due to unpredictable rainfall patterns
• Analyze, Preserve and Plant the quality seeds for further continuous improvement
• Grow farming capacity to suffice the demands of local market and expand further in export market
• Minimize use of pesticides to produce superior quality grains and fruits.

Responsibilities

• Plan for vegetables based on quality of soil and season
• Track, control and repair traditional irrigation system
• Cleaning, packaging and distribution of vegetables to local markets, malls, weekly markets.
• Purchase quality seeds, pesticides, fertilizers, farming equipment from different companies.

Needs

• I always need a lot of manpower/workers at field to take care of farming activities
• Planning and organizing skilled workers at crucial time, is my key to success
• It will be of great help, to get few of my key activities being monitored and performed automatically.
• Optimized use of pesticides has been a demanding scenario these days, from a particular segment of market.

Pain Points
• Lot of wastage of water and fertilizers
• Excessive pesticides usage results into rejection of my vegetables and fruits in market, occasionally.
• Maintaining quality of soil over years is a challenge in future considering amount of water being spread
• Damage done by birds, flies, rats to the developed crop is our traditional worry. In spite of having few manual solutions, 100% protection is not achieved.
Point of View (PoV)

**Point of View: 1**

As a _Young Generation Farmer____

I need a way to _plan my farming activities in a more structured way, with lesser dependency on laborers and skilled workers__

so that _I can produce my crops at lower cost and reduced wastage_.

**Point of View: 2**

As a _Quality vegetable producer____

I need a way to _make selective use of fertilizers and pesticides over my vegetables and fruits, in an automated mechanism__

so that _I can fulfill the demands of every segment without any compromise of quality_
UX Journey
Describe Actions, Mindset, Feelings and Touch points

Actions
The important action to achieve my goal towards my viewpoint is to make effective use of Information technology + Mechanical Parts + Pneumatics + Resources at hand

I should access every touch point in my farm and fields, to re-assess their existence and importance. If need be, I should add more of technology and get rid of manual intervention.

In parallel I also have to prove my vegetables and fruits as globally acceptable export quality. In this era of Bio-Vegan products, I must stand tall and bring in the best quality for my product.

First action in this journey will be introduction of partial automation of my processes, either by building specific machine tools or certain computing technology.

My next action, off course, will be reduction of losses in every area. At the moment, 30% of my revenues are lost into excess consumption of farming resources. I must bring it below 5 % with first action and agricultural innovations.

Mindset
I should get something implemented easily, without any impact on planned production. Crops and vegetables are continuously produced / harvested, which leave me for a little space / timeframe to bring any new machinery.

But on the other hand, I must bring this change as it’s a highly competitive market with global producers in farming field. Making perfect use of Make In India drive, I should be focusing more on export of quality vegan products.

Feelings
In the chart below I depict the journey of a Persona – Shivajirao Patil to achieve his goals and his happiness scale.

Touch Points
Key touch points in this farming IoT scenario will be: Sensors under soil, Drones, Image processing software, Seed of quality grade etc.
User Experience Journey: Controlled Irrigation with Balanced Fertilizers and Optimal Pesticides

<table>
<thead>
<tr>
<th>FARMING STAGE</th>
<th>Crop Selection</th>
<th>Land Preparation</th>
<th>Seed Selection &amp; Sowing</th>
<th>Irrigation</th>
<th>Crop Growth &amp; Fertilization</th>
<th>Harvesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Reach out in local market / or online retailers for quality seeds</td>
<td>Right Sensors placement in field and required electro-mechanical fitments</td>
<td>I need to follow standard procedure of equidistant sowing, learned during masters Agri course. I have done with my job now.</td>
<td>Right mix of water and fertilizer to be injected directly at the root of my crops. Monitor the growth, to compare with traditional method</td>
<td>Protect from flies, rats, and birds. Maintain the quality at the same time, with least use of Pesticides.</td>
<td>Crops are ready, should be cut, stacked, cleaned and packed for dispatch. Avoid wastage in manual activities. Use machines.</td>
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<tr>
<td>MINDSET</td>
<td>This time I should get a quality like last year, as rain predictions are good</td>
<td>The quality of these sensors are really good, I should be able to save lot of water and fertilizers</td>
<td>The time in waiting for first plant in my field is too long, I am curious, as always</td>
<td>The amount of fertilizer consumed appears to be lesser, when injected at roots! Good.</td>
<td>We won’t spread the pesticides everywhere. Only infected crops need it</td>
<td>Lot of saving in Fertilizers, Water and Pesticides. I should get higher rates in market</td>
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<tr>
<td>FEELING</td>
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Prototype

You can use this space to insert your mockup(s):

Mockups are created on Build:

https://standard.build.me/prototype-editors/api/public/v1/snapshots/171b0e6c54d16ef50e1fa40e/artifacts/latest/index.html#/launch_page