

## Project Design Phase-I Problem – Solution Fit Template

Date	19 September 2022
Team ID	PNT2022TMID26608
Project Name	IoT Based Smart Crop Protection System for Agriculture
Maximum Marks	2 Marks

### Problem – Solution Fit Template:

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

### Purpose:

- ☐ Solve complex problems in a way that fits the state of your customers.
- ☐ Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- ☐ Sharpen your communication and marketing strategy with the right triggers and messaging.
- ☐ Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- ☐ **Understand the existing situation in order to improve it for your target group.**

### Template:

Define CS, fit into CL	<b>1. CUSTOMER SEGMENT(S)</b> <span style="float: right;">CS</span> <ul style="list-style-type: none"> <li>Farmers who trying to protect crops from various problems</li> </ul>	<b>6. CUSTOMER LIMITATIONS</b> <small>EG. BUDGET, DEVICES</small> <span style="float: right;">CL</span> <ul style="list-style-type: none"> <li>Limited supervision.</li> <li>Limited financial constrains.</li> <li>Lack of man power.</li> </ul>	<b>5. AVAILABLE SOLUTIONS</b> <small>PLUSES &amp; MINUSES</small> <span style="float: right;">AS</span> <ul style="list-style-type: none"> <li>Automation in irrigation.</li> <li>CCTV Camera to monitor and supervise the crops.</li> <li>Alarm system to give alert while animals attacks the crops.</li> </ul>	Explore AS, differentiate
	<b>2. PROBLEMS / PAINS</b> <small>+ITS FREQUENCY</small> <span style="float: right;">PR</span> <ul style="list-style-type: none"> <li>Crops are not irrigated properly.</li> <li>Improper maintenance of crops.</li> <li>Lack of knowledge among farmers in usage of fertilizers and hence crops are affected.</li> <li>Requires protecting crops from Wild animals attacks, birds and pests.</li> </ul>	<b>9. PROBLEM ROOT / CAUSE</b> <span style="float: right;">RC</span> <ul style="list-style-type: none"> <li>Due to insufficient labour forces.</li> <li>Due to various environmental factors such as temperature climate, topography and soil quality which results in crop destruction.</li> <li>Due to high ammonia, urea, potassium and high Ph level fertilizers.</li> <li>Crops are damaged and it affects growth.</li> </ul>	<b>7. BEHAVIOR</b> <small>+ITS INTENSITY</small> <span style="float: right;">BE</span> <ul style="list-style-type: none"> <li>Asks suggestions from surrounding peoples and implement the recent technologies.</li> <li>Consumes more time in crop land.</li> <li>Searching for an alternative solution for an existing solution.</li> </ul>	
Identify strong TR & EM	<b>3. TRIGGERS TO ACT</b> <span style="float: right;">TR</span> <ul style="list-style-type: none"> <li>By seeing surrounding crop land with installing machineries.</li> <li>Hearing about innovative technologies and effective solutions.</li> </ul>	<b>10. YOUR SOLUTION</b> <span style="float: right;">SL</span> <ul style="list-style-type: none"> <li>Moisture sensor is interfaced with Arduino Micro:controller to measure the moisture level in soil and relay is used to turn ON and OFF the motor pump for managing the excess water level. It will be updated to authorities through IOT.</li> <li>Temperature sensor connected to micro:controller is used to monitor the temperature in the field. The optimum temperature required for crop cultivation is maintained using sprinklers.</li> <li>IOT based fertilizing methods are followed, to minimize the negative effects on growth of crops while using fertilizers</li> <li>Image processing techniques with IOT is followed for crop protection against animal attacks.</li> </ul>	<b>8. CHANNELS of BEHAVIOR</b> <span style="float: right;">CH</span> <b>ONLINE:</b> Using different platforms /social media to describe the working and uses of smart Crop protection device.  <b>OFFLINE:</b> <ul style="list-style-type: none"> <li>Giving awareness among farmers about the application of the device.</li> </ul>	Extract online & offline CH of BE
	<b>4. EMOTIONS</b> <small>BEFORE / AFTER</small> <span style="float: right;">EM</span> <ul style="list-style-type: none"> <li>Mental frustrations due to insufficient production of crops.</li> <li>Felt smart enough to follow the available technologies with minimum cost.</li> </ul>			