Project Title: Emerging Method of early detection of forest fire **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID44045

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Who is your customer?
i.e. working parents of 0-5 y.o. kids

Our customers are forest people living near the forest, wild animals, and our ecosystem.

6. CUSTOMER CONSTRAINTS CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

Protecting our forests when fires spread rapidly means we need to detect and act quickly to save our forests.

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? i.e. pen and paper is an alternative to digital notetaking

The four types of fire detectors are **ionization/photoelectric, photoelectric, ionization, and heat**. The differences in these four types are found in how they detect a fire – heat is obviously triggered by temperature while the other three are from smoke.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

For the detection of fire conditions, two analytical methods are used, namely, **threshold ratio analysis and analysis using a machine learning algorithm**

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?
i.e. customers have to do it because of the change in regulations.

There are many factors that cause forest fires, among others, may be mentioned 7 root causes of the fire are: (1) to extreme weather conditions, (2) peat combustible, (3) different ways of farming population by burning, (4) widespread burning action financially motivated, and (5) are not optimal prevention by officers at lower levels, (6) less fast and effective and (7) that law enforcement cannot touch the master-mind of combustion.

7. BEHAVIOUR BE

What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

Cameras are very likely to perform worse than human observers; they are not suitable replacements for human tower observers. Human observers and the three systems were tested to report forest fires by detecting a column of smoke, where it required a long delay from the ignition moment to produce noticeable smoke that can be detected by human or sensor cameras. Atmospheric conditions, landscape appearance, and smoke characteristics were in different parts of the world.

Focus on J&P, tap into BE, understand RC

3. TRIGGERS TR

What triggers customers to act? i.e. seeing their neighbor installingsolar panels, reading about a more efficient solution in the news.

The amount of fuel available to burn is known as the fuel load. The bigger the fuel load, the more intense the fire will be in terms of heat energy output. **Moisture content**: If the fuel isn't dry enough, it won't burn. The less moisture in the fuel, the more likely it will ignite and burn.

10. YOUR SOLUTION SL

If you are working on 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 inthe canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behavior

When time goes by, human beings are advancing in technology, artificial and natural disasters are drastically increasing. The forest fire is one of the hazards. Forest fire incinerates trees that provide us with oxygen and if it is not detected early, it is very elusive to

8. CHANNELS of BEHAVIOUR CH

ONLINE

What kind of actions do customers take online? Extract online channels from #7
To fit the alarm to our project it helps to detect the fire easily in online.

OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7and use them for customer development.
One of the ways fires are detected is by **lookout stations**. These are situated at a location with extensive visibility and have associated structures manned by a lookout observer

Identify strong TR & EM

4. EMOTIONS: BEFORE / AFTER EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

It is common for people to experience several stages of adjustment including shock, anger, depression, and hopelessness after losing a home. **Residential fires can lead to significant emotional distress in addition to possible physical injuries**.

stop a forest fire from continue burns. The project's objective is to capture infrared image of forest fire detection using the appropriate camera, detect fire with RGB and YCbCr color model to isolate fire pixels from the background and separate luminance and chrominance from the original image, and filter image using MATLAB Analyzer to process images. The method is tested on a selected image, which captured by the camera that contains fire. Next method is used for calculating and analyzing the fire image, which to differentiate between fire detection or false detection. Other method is used to process the fire image, which the image will compute and shown in terminal nodes and graphs by using Wavelet Analyzer 5.0. The results of this system are achieved fire detection and obtain data for the fire images.

whose prime purpose is to locate and report wildfires. A network of five lookout stations is spread throughout the NWT.

Identify strong TR & EM