Project Title: Emerging methods for early detection of forest fires **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID40862

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

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

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.

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

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.

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.

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)

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

Forest Department officials whc
immediately informed in case o
detection.

Also educated tribals/forest livi
our customers who can be alert

The main constraint is that fires ar
late and it becomes difficult to sup
the exact origin of fire.
It requires lot of water, gas and hu
to suppress huge fires. Also money
For forest living people, they fear t
cattles, properties alone in fear of

In the past, forest fires were detected using watchtowers, which were not efficient because they were based on human observations.

In recent history and even the present day, satellite image processing methods, wireless sensor network, optical sensors, CO_2 and gas sensor-based methods exist.

But there are some drawbacks, such as inefficiency, power consumption, latency, accuracy and implementation costs for above methods.

- The main problem is forest fi
very late before which more
to our most valuable ecologi
- We propose a method for ea
forest fires and intimation of
immediately.
- We also predict the probabil
of forest fires in a particular
season.

These fires can be caused by n
as high temperatures that can
combustion of dry fuel such as
lightning, etc.,
They are also caused by huma
unextinguished campfires, ars
burned debris, etc.
Forest authorities need to exti
possible to save lives, habitat
environment.

The customer needs to search for proper solution available in net or through various sources and find feasible methods.

They need to critically analyze the suitability and benefits of the solutions available and choose the most suited one for their requirements and particular scenario.

Also customers can spend free time to address various other problems in forest than these fires.

3. TRIGGERS

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

Forest Department officials have pressure from government and Environmentalists to preserve the most essential forest cover and wildlife.

Also they have responsibility of reducing the green house effects, CO_2 emissions and climatic change. So preventing effects of forest fires is extremely important task for them

Also customers act by seeing the effectiveness of our solution and knowing about them in our websites.

strong TR & EM

4. EMOTIONS: BEFORE / AFTER

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.

- **Forest Department officials feel helpless when huge portion of forest cover is affected by fires. They find it very difficult to control them.**
- **The lives of tribal people and their properties are also insecure as any time fires can damage their valuables.**
- **After we implement our solution, they can be relieved and confident that natural resources is safe and they can immediately take right action at right time.**

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 in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

The user interacts with a web camera to read the video.

Once the input image from the video frame is sent to the model, if the fire is detected, it is showcased on the console, and alerting sound will be generated and an alert message will be sent to the Authorities.

To achieve this, we classify images using a Convolutional Neural Network and use other open CV tools.

In reality, this solution requires HD cameras to be installed in forests or needs data from satellites.

This increases cost of installation but satisfies the customer requirements and addresses their problem

8. CHANNELS of BEHAVIOUR

CH

8.1 ONLINE

What kind of actions do customers take online? Extract online channels from #7

8.2 OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

In online, customers can inspect the status of various places in forest and also get an idea of what is going on in the forest.

Also customers will have ready data to know the probability of occurrence of fires in an area so that they can make arrangements ready in case of emergency.

In, offline they can directly go to the affected area and immediately suppress the fire and save huge amount cost, time, resources and efforts.

In the remaining time, forest officials can concentrate on other important aspects of enriching our flora and fauna and maintaining ecological balance.

Identify strong T