Project Title: A Novel Method for Handwritten Digit Recognition **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID52947

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

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

People working in sectors that involve recognition of hand written digits in their primary work. Example: Banking employees, Postmen, Pharmacists, teachers etc.,

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.

Unclear and blurry images due to poor camera quality leads to error prone results.

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

Currently there are no popular programs and softwares to detect the handwritten digits.

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.

The variety of handwriting exists all around the world. It is impossible to read every handwriting with accuracy. Dealing with rough handwriting could result in mistakes. So, our project will help them prevent these errors.

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?

Due to the great range of writing styles employed by individuals, handwritten number identification has various challenges because it is not an optical character recognition. Because various persons employ different writing styles and different languages, customers find it challenging to interpret the handwritten numerals. This study provides a comprehensive comparison of several deep literacy and machine literacy handwritten number recognition methods.

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)

The customer must upload a clear image of the digits that needs to be recognised.

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

Identify strong TR & EM

3. TRIGGERS TR

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

When people find it difficult to recognise handwritten digits. Example People with vision impairment and old aged people.

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.

Before: Tedious, time taking, eye-strain due to unclear hand writings

After: Relieved, Easy and fast.

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.

A novel method for a handwritten digit recognition system helps in recognizing the handwritten digits by using neural networks for providing higher accuracy with minimal errors.

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.

Online: The customer needs to upload the picture that was taken.

Offline: The customer needs to take a clear picture of the digits that need to be recognised.

Identify strong TR & EM