Project Design Phase-I - Solution Fit Template

Project Title: Early Detection of Chronic Kidney Disease using Machine Learning
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Define CS, fit into CC

1. CUSTOMER SEGMENT(S) — CS

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

Patients that face mild to severe symptoms ranging from unusual fatigue, high blood pressure, malaise to insufficient urine production, high levels of creatinine, kidney failure; that maybe an indication of a serious health issue like chronic kidney disease prediction.

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.

i. Although free, the web program works on computers, smartphones, and other electronic gadgets, which may be out of reach for the less fortunate members of the society.

ii. Requires recent blood/urine test results, making this a requirement for the machine learning model before it can offer a forecast.

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 primary treatments are lifestyle modifications to keep you as healthy as possible, medication to manage issues like high blood pressure and high cholesterol, and dialysis. None of these options focuses on early kidney disease detection using data from specific human body testing. All primary therapies may be avoided by quickly completing an early diagnostic.

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 following jobs are to be done:

i. Identify the most important diagnostic data that can cause chronic kidney disease

ii. Create an ML model that can predict the presence of chronic kidney disease iii. Design an interactive, simple and freely available UI for communicating with the patients.

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.

Kidney disease is most frequently brought on by diabetes. However, obesity and heart disease can also contribute to the harm that results in renal failure. Long-term functional decline can also be brought on by problems with the urinary system and inflammation in various kidney regions.

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)

First, it is assumed that the patient would undergo a few tests and provide the required results as input to the frontend of the created system. Based on this data, the machine learning model predicts the future. The fact that the application is free to use makes it incredibly beneficial to users.

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.

Patients are encouraged to get a kidney function test if they experience symptoms that point to potential renal issues. These signs and symptoms may include: unusual nausea and vomiting; blood in urine (hematuria) and painful urination (dysuria).

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.

Patients experience a rush of terror prior to interacting with the suggested system. They will feel relieved and acquire a diagnosis after seeing the results.

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.

Patients with chronic kidney disease require a means to prevent its development into a severe condition by early detection and effective treatment. With the advancement of machine learning, it is now able to search through patient medical records and spot chronic kidney disease in its early stages. The system successfully resolves the aforementioned issue without charging a fee by combining the machine learning model with an intuitive UI.

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.

8.1. ONLINE
In order for the machine learning model to produce predictions, the patients are required to provide the appropriate health check test results into the online application.

8.2 . OFFLINE
In order to complete the required health examination, patients must visit laboratories or hospitals, from which the information can be entered into the web application.

Identify strong TR & EM