

Project Design Phase
Problem – Solution Fit Template

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| Date | 19 February 2026 |
| Team ID | LTVIP2026TMIDS40157 |
| Project Name | HematoVision: Advanced Blood Cell Classification Using Transfer Learning |
| Maximum Marks | 2 Marks |

Problem – Solution Fit Template:

The Problem :

In clinical laboratories and hospitals, blood cell classification is primarily performed manually using microscopic analysis. This traditional approach presents several challenges:

- Time-consuming diagnostic process
- High dependency on skilled pathologists
- Risk of human error due to fatigue and workload
- Delayed detection of serious diseases such as:
 - Leukemia
 - Anemia
- Limited diagnostic support in rural or underserved areas

The existing system lacks automation, scalability, and real-time efficiency, which affects overall healthcare quality and patient outcomes.

Target Customers / User :

- Hospital
- Diagnostic laboratories
- Pathologists
- Healthcare professionals
- Telemedicine platforms
- Medical training institutions

Customer Pain Points :

- Manual classification requires expert supervision.
- Increased workload leads to inconsistent results.
- Slow report generation affects treatment decisions.
- High operational costs in pathology labs.
- Limited access to specialists in remote regions.

The Solution – HematoVision :

HematoVision is an AI-based blood cell classification system developed using Transfer Learning with pre-trained Convolutional Neural Networks (CNNs).

The system:

- Uses a dataset of 12,000 annotated blood cell images.

- Classifies white blood cells into:
 - Eosinophils
 - Lymphocytes
 - Monocytes
 - Neutrophils
- Reuses pre-trained image features to improve performance.
- Provides fast and accurate classification results.

Transfer learning reduces training time, improves accuracy, and minimizes computational costs while ensuring reliable predictions.

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:

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| Define CS, fit into CC | 1. CUSTOMER SEGMENT(S) Who is your customer? I.e. working parents of 0-5 y.o. kids | CS | 6. CUSTOMER CONSTRAINTS 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. | CC | 5. AVAILABLE SOLUTIONS 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 note-taking | AS | Explore AS, differentiate |
| Focus on J&P, tap into BE, understand RC | 2. JOBS-TO-BE-DONE / PROBLEMS Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides. | J&P | 9. PROBLEM ROOT CAUSE 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. | RC | 7. BEHAVIOUR 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) | BE | Focus on J&P, tap into BE, understand RC |
| Identify strong TR & EM | 3. TRIGGERS What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. | TR | 10. YOUR SOLUTION 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. | SL | 8. CHANNELS OF BEHAVIOUR 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. | CH | Extract online & offline CH of BE |
| | 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. | EM | | | | | |

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>