**Project Design Phase**

**Problem – Solution Fit**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID60665 |
| Project Name | Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques |
| Maximum Marks | 2 Marks |

**Problem – Solution Fit :**

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer’s problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

**Problem–Solution Fit: Liver Cirrhosis Prediction using Machine Learning**

**The Problem-Solution Fit**

**Liver cirrhosis is a silent killer—progressing without symptoms until the damage becomes irreversible. In countries like India, most patients cannot afford invasive diagnostics or delay visiting hospitals due to cost, distance, or lack of awareness. Current healthcare systems lack affordable, scalable tools for early liver disease screening. This leads to poor treatment outcomes, higher mortality rates, and increased pressure on tertiary hospitals.**

**purpose**

**To solve a life-threatening medical problem\*\* by making early liver disease detection accessible, affordable, and AI-driven.**

**To empower frontline healthcare providers\*\* in rural and semi-urban regions with instant diagnostic tools that require minimal resources.**

**To reduce patient burden\*\* by eliminating the need for invasive and expensive diagnostic procedures in the early stages.**

**How the Solution Fits the Customer’s Behavior**

**Patients regularly undergo basic blood tests—our model uses these already-existing tests (bilirubin, enzymes, albumin, etc.) to make predictions.**

**\* Doctors are already familiar with web apps and mobile tools—we provide a simple interface with no technical complexity.**

**\* Health workers can use this tool on tablets/phones during rural check-ups, increasing accessibility without changing their current workflows.**

**Why It Works**

**\* \*\*Behavioral Insight:\*\* Patients avoid hospitals until it’s urgent. A fast, low-cost online tool encourages preventive checks.**

**\* \*\*Trust-building:\*\* Medical staff trust data-driven tools if they're easy to use and reliable—our ML model offers high accuracy with explainable results.**

**\* \*\*Cost-sensitive fit:\*\* Healthcare providers and NGOs seek cost-effective screening solutions. This tool is scalable, cloud-hosted, and requires no hardware.**

**Strategic Benefits**

**\* \*\*Faster Solution Adoption:\*\* Fits into existing workflows of doctors and health workers.**

**\* \*\*Sharpened Messaging:\*\* “Early Liver Prediction in One Click” becomes a powerful message for both urban and rural deployment.**

**\* \*\*Expanded Touchpoints:\*\* Deploy in hospitals, health camps, government wellness centers, and mobile health vans.**

**\* \*\*Trust and Satisfaction:\*\* Reduces uncertainty for both patients and doctors by offering predictive insights based on real medical data.**

**Understanding the Existing Situation**

**Most liver disease patients are diagnosed at a late stage due to lack of early tools. This solution bridges the gap between basic clinical data and actionable insights, turning simple lab reports into life-saving alerts. It improves the existing care system without adding any burden, training, or cost to patients or caregivers.**