

## Project Design Phase

### Problem – Solution Fit Template

Date	
Team ID	LTVIP2026TMIDS40243
Project Name	Online Payments Fraud Detection
Maximum Marks	2 Marks

#### Problem – Solution Fit :

In the Online Payments Fraud Detection System, the problem–solution fit is achieved by identifying a major concern of digital payment users and financial institutions — fraudulent online transactions causing financial loss and security risks.

Problem – Solution Fit Template:

<b>1 Customer Segments</b> <ul style="list-style-type: none"> <li>Online payment users (UPI, banking app, wallet users)</li> <li>Banks &amp; Financial Institutions</li> <li>Digital payment platforms</li> <li>Fraud monitoring teams</li> </ul>	<b>2 Customer Problems</b> <ul style="list-style-type: none"> <li>Rising online fraud transactions</li> <li>Fear of unauthorized money transfer</li> <li>Delay in detecting suspicious transactions</li> <li>Financial loss and lack of trust in digital payments</li> </ul>
<b>3 Customer Constraints</b> <ul style="list-style-type: none"> <li>Traditional rule-based systems fail to detect new fraud patterns.</li> <li>Huge volume of transactions makes manual checking impossible</li> <li>Severe class imbalance (Fraud &lt; 1%)</li> <li>Need for real-time detection without slowing transactions.</li> </ul>	<b>4 Available Solutions (Existing)</b> <ul style="list-style-type: none"> <li>Manual verification</li> <li>Rule-based fraud detection systems</li> <li>OTP-based confirmation systems</li> <li>Transaction limits (But these are not fully efficient.)</li> </ul>
<b>4 Available Solutions (Existing)</b> <ul style="list-style-type: none"> <li>Manual verification</li> <li>Rule-based fraud detection systems</li> <li>OTP-based confirmation systems</li> <li>Transaction limits (But these are not fully efficient.)</li> </ul>	<b>5 Triggers</b> <ul style="list-style-type: none"> <li>Sudden large transaction</li> <li>Transaction from unusual account pattern</li> <li>Transfer or CASH_OUT type transactions</li> <li>Rapid balance changes</li> </ul>
<b>7 Our Proposed Solution</b> <ul style="list-style-type: none"> <li>Machine Learning-based Fraud Detection System</li> <li>Used Kaggle Online Payments dataset (5M+ records)</li> <li>Models tested:               <ul style="list-style-type: none"> <li>Decision Tree</li> <li>Random Forest</li> <li>Extra</li> <li>SVM</li> <li>XGBoost</li> </ul> </li> <li>Final selected model: Decision Tree</li> </ul>	<b>6 Jobs-To-Be-Done / User Needs</b> <ul style="list-style-type: none"> <li>Detect fraud instantly</li> <li>Prevent financial loss</li> <li>Maintain smooth &amp; fast transactions</li> <li>Increase customer trust</li> </ul>
<b>References:</b> <ol style="list-style-type: none"> <li><a href="https://www.ideahackers.network/problem-solution-fit-canvas">https://www.ideahackers.network/problem-solution-fit-canvas</a></li> <li><a href="https://medium.com/@ap.cantus/problem-solution-fit-canvas-as9ad55cb-ffe">https://medium.com/@ap.cantus/problem-solution-fit-canvas-as9ad55cb-ffe</a></li> </ol>	<b>8 Channels of Behaviour</b> <ul style="list-style-type: none"> <li>Web-based prediction system</li> <li>Real-time transaction input form</li> <li>Model-based fraud probability prediction</li> </ul>
	<b>9 Emotions Before / After</b> <ul style="list-style-type: none"> <li>Before: Fear, Frustration</li> <li>After: Trust, Security, Confidence in online payments</li> </ul>

#### Purpose:

- ☐ Solve the problem of rising online payment fraud using an intelligent and automated machine learning approach.
- ☐ Enable faster fraud detection and reduce financial loss by providing real-time prediction results through a Flask web application.
- ☐ Improve user trust and transaction security by identifying suspicious transactions instantly.
- ☐ Increase system reliability by handling large-scale transaction data (Kaggle dataset – 6.3M)

records).

☐ Understand current fraud patterns and transaction behaviours to continuously improve detection accuracy for online payment systems