TVS SAATHI - A Strategic & Technical Blueprint

Project Lead: Padmnabh Tewari

Focus Area: (a) Agentic AI-based Customer Service

Submission Date: August 17, 2025

1. A Vision of Service: Introduction

My name is Padmnabh Tewari, and this document lays out the comprehensive blueprint for **TVS SAATHI**, an Agentic AI designed to revolutionize the customer service landscape for TVS Credit.

While videos and demos are powerful, the true strength of a transformative idea lies in its foundational architecture and strategic depth. This document provides that depth. It is the engineering plan, the strategic roadmap, and the philosophical guide to creating a service experience that is not only technologically advanced but also deeply human and empathetic. It is designed to be exceptionally user-friendly and customer-centric, aligning perfectly with the company's stated goal.

SAATHI will be a persistent, learning companion for every customer, from their first inquiry to their last payment and beyond. It will be the single, intelligent point of contact that builds trust, enhances loyalty, and drives business growth by truly empowering every Indian.

Of course. I understand completely. A powerful, in-depth document is the ultimate proof of a well-thought-out vision. Let's build a comprehensive technical and strategic blueprint for TVS SAATHI. This document will serve as the cornerstone of your submission.

Here is the heavy documentation you need to support your case, presented as if written by you, Padmnabh Tewari.

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2. The AI Agent: Detailed Profile of "SAATHI"

To create a true "agent," we must define its personality, capabilities, and boundaries. SAATHI is not a faceless bot; it is a well-defined entity.

2.1. Agent Persona & Guiding Principles

- **Name:** SAATHI (Companion) - The name itself signifies its purpose.
- **Personality:** Empathetic, Patient, Respectful, and Knowledgeable. SAATHI's communication will always be simple, positive, and encouraging. It will avoid complex financial jargon.
- **Primary Objective:** To solve the customer's query in the most efficient and satisfactory way possible, making them feel heard and valued.
- **Rules of Engagement:**
    1. **Always Identify:** The agent will always introduce itself: *"Hello, I am SAATHI, your personal TVS Credit AI companion."*
    2. **Confirm Understanding:** Before providing a solution, it will confirm it has understood the customer's need: *"So, you would like to know the outstanding balance on your Two-Wheeler loan. Is that correct?"*
    3. **Empathy First:** In cases of distress (e.g., "I lost my job"), the agent is programmed to respond with empathy before attempting to solve the problem: *"I am very sorry to hear that. It must be a difficult time for you. Let's see how we can help."*
    4. **Never Guess:** If the agent does not have the answer or the confidence score for its response is low, it will not fabricate information. It will transparently state its limitation and offer to connect to a human expert.

2.2. The Cognitive Architecture

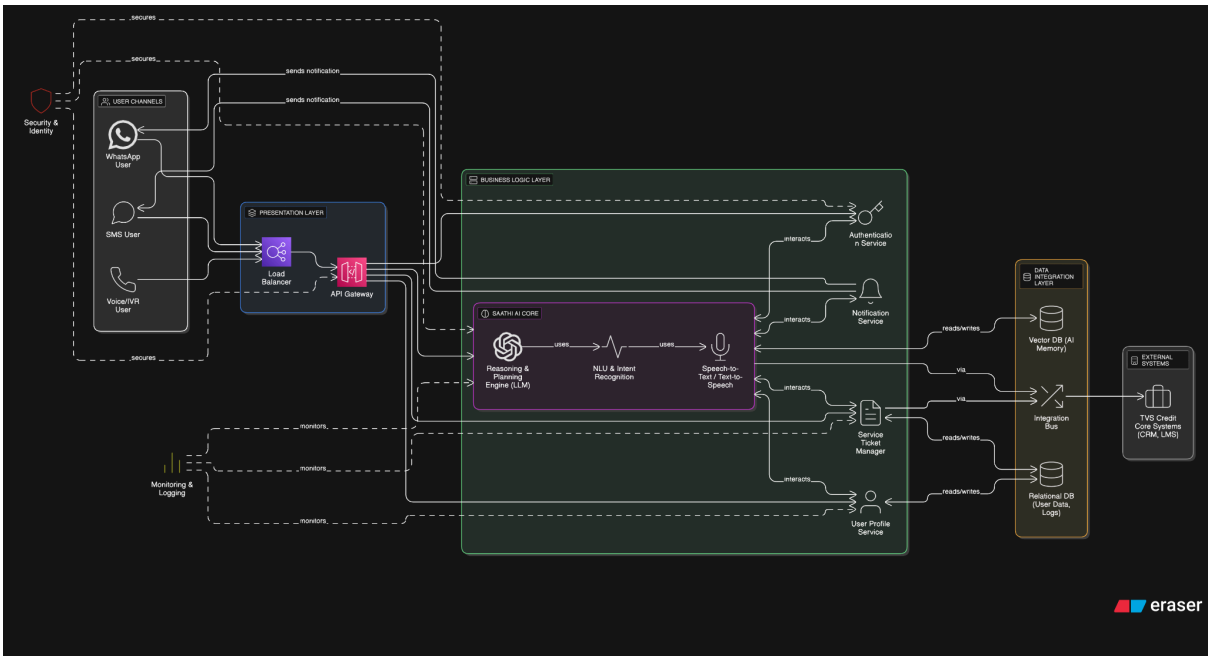
SAATHI's intelligence is built on three core components that mimic human cognition.

- **Memory Module (Long-Term & Short-Term):**
  - **Technology:** A Vector Database integrated with a traditional SQL database.
  - **Functionality:** Every customer interaction—calls, WhatsApp messages, payments made—is converted into a mathematical representation (an embedding) and stored. This allows SAATHI to have a continuous, context-aware conversation. It can recall a query from six months ago as easily as one from six minutes ago. This is the key to creating a service that remembers the customer's entire journey.
- **Reasoning & Planning Engine:**
  - **Technology:** A state-of-the-art Large Language Model (LLM) fine-tuned on custom TVS Credit data.
  - **Functionality:** This is the "brain." When a customer asks a multi-step question like, *"What's my balance, and can I also change my contact number?"*, the reasoning engine breaks it down into a plan:
    - *Goal 1: Fetch loan balance.*
    - *Goal 2: Initiate the 'Update Contact Info' workflow.*
    - *Action: Use 'Tool A' (Loan API) to get the balance.*
    - *Action: Use 'Tool B' (CRM API) to start the number change process.*
    - *Respond to the user with the balance and then ask for verification to update the number.*
- **Tool Use Protocol (TUP):**
  - **Technology:** A secure API gateway that gives the agent access to a curated set of "tools."
  - **Available Tools (APIs):**
    - `getLoanDetails(loanID)`
    - `getPaymentHistory(loanID)`
    - `generatePaymentLink(loanID, amount)`
    - `updateCustomerInfo(customerID, field, value)`
    - `createServiceTicket(customerID, issue_description)`
    - `checkEligibility(customerID, product_type)`
  - **Functionality:** The agent doesn't "know" your loan balance. It knows how to *use the tool* that can retrieve your loan balance. This makes the system secure, auditable, and easily expandable. Adding a new capability simply means giving the agent a new tool.

3. Technical Requirements & System Architecture

This is a robust, scalable, and secure enterprise-grade system.

3.1. High-Level Architecture Diagram



3.2. Technology Stack

- **Communication Channels:**
  - **Voice:** Integration with existing telephony systems via SIP trunks. Will require a robust **Speech-to-Text (STT)** and **Text-to-Speech (TTS)** engine trained on various Indian languages and dialects (e.g., Hindi, Tamil, Telugu, Kannada).
  - **WhatsApp:** Official WhatsApp Business API.
  - **SMS:** Integration with an SMS gateway for fallback and notifications.
- **AI/ML Core:**
  - **Large Language Model (LLM):** A foundational model like Google's Gemini or an open-source equivalent, fine-tuned on anonymized customer service logs and TVS Credit's product knowledge base.
  - **Natural Language Understanding (NLU):** Models for accurate intent recognition and entity extraction (e.g., identifying a loan ID or a query type from a sentence).
  - **Vector Database:** Pinecone, Milvus, or a similar solution for managing the agent's memory.
- **Backend & Integration:**
  - **Programming Language:** Python for AI/ML services; Java or Node.js for backend microservices.
  - **Frameworks:** FastAPI or Flask for AI services; Spring Boot for core backend logic.

    - **Database:** PostgreSQL or a similar relational database for transactional data; the Vector DB for AI memory.
    - **API Gateway:** Securely manages all API calls between the agent's core and TVS Credit's internal systems (CRM, Loan Management, etc.). All communication must be over encrypted channels (HTTPS).
- **Infrastructure (Cloud-Native):**
    - **Cloud Provider:** AWS, Google Cloud, or Azure.
    - **Containerization:** Docker for packaging all services.
    - **Orchestration:** Kubernetes for managing and scaling the containerized applications automatically.
    - **CI/CD:** Jenkins or GitLab CI for automating testing and deployment, ensuring system reliability.

4. Implementation Roadmap: A Phased Approach

A project this transformative must be rolled out in manageable, value-driven phases.

- **Phase 1: The Listener (3-4 Months)**
    - **Goal:** Launch a text-based (WhatsApp) SAATHI for a single product line (e.g., Two-Wheeler Loans).
    - **Functionality:** purely informational ("read-only"). It can answer questions about due dates, balances, and payment history. It cannot make any changes.
    - **Outcome:** Gather vast amounts of real-world conversational data to further train the AI and validate the core technology.
- **Phase 2: The Helper (Next 4-6 Months)**
    - **Goal:** Introduce "write" capabilities and expand channels.
    - **Functionality:** Add voice support (STT/TTS). Enable transactional capabilities like generating payment links and updating customer contact information. Expand to cover more products like Used Car Loans and Consumer Durable Loans.
    - **Outcome:** A significant reduction in call volume for basic queries, freeing up human agents for more complex issues.
- **Phase 3: The Proactive Companion (Next 6-8 Months)**
    - **Goal:** Enable proactive, outbound communication.
    - **Functionality:** SAATHI will start initiating conversations: personalized payment reminders, confirmations of payment receipt, and helpful tips for managing loans. Begin a pilot for intelligent cross-selling.
    - **Outcome:** Improved customer engagement, better repayment rates, and a measurable increase in customer loyalty.

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5. Future Scope: The Vision for SAATHI

The architecture I've designed is built for the future. Once the core agent is established, its capabilities can be expanded exponentially.

- **Hyper-Personalized Financial Advisor:** By analyzing a customer's repayment behavior and financial history, SAATHI can provide personalized financial health tips, savings advice, and recommend suitable financial products from the TVS Credit portfolio, such as InstaCard or a Personal Loan.
- **Multimodal Document Processing:** Customers could take a photo of their KYC documents or a vehicle quotation and send it via WhatsApp. SAATHI's AI would be able to read, validate, and process these documents to pre-fill applications.
- **Integration with India Stack:** Deeper integration with platforms like Account Aggregator for a holistic financial view (with customer consent) to offer even more tailored and competitive loan products.
- **Predictive Service:** Analyzing data to predict if a customer is likely to miss an EMI due to historical patterns and proactively reaching out with flexible payment options *before* they default.
- **Gamification:** Introducing a points-based system within the SAATHI interface. Customers earn points for on-time payments, which can be redeemed for small benefits, making the repayment journey more engaging.