# **Functional Requirement Document (FRD)**

**Project Name:** WhatsApp AI Agent SaaS Platform  
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## **1. Project Overview**

The platform will provide **WhatsApp-based AI agents** for global SMBs, enabling them to automate **lead conversion, onboarding, and helpdesk** with minimal setup.

Key goals:

* **1-minute onboarding** for SMBs.
* AI agents configurable in **tone, language, knowledge base (RAG)**.
* Credits-based billing mapped to **number of WhatsApp messages**.
* Simple **mobile app** for business owners to capture leads (via photo, voice, manual entry, CSV).
* SaaS backend with multi-tenant support.

## **2. Objectives**

1. Provide a **plug-and-play AI agent** on WhatsApp for SMBs.
2. Support **multi-language, multi-tone** conversations.
3. Allow **lead capture anywhere** (photo OCR, voice, CSV, manual).
4. Provide **real-time conversation tracking & analytics**.
5. Implement a **credit recharge system**.
6. Ensure **safe usage** with content moderation & compliance.

## **3. Users & Personas**

### **3.1 Business Owner (Client)**

* Non-technical SMB user.
* Wants instant lead engagement without dashboards.
* Uses mobile app for lead capture & quick reporting.

### **3.2 Platform Admin**

* Manages tenants, credits, moderation rules.
* Monitors abuse/misuse.
* Handles billing + WhatsApp provisioning.

### **3.3 End Customer (Lead)**

* Receives WhatsApp messages.
* Interacts with AI agent for sales, onboarding, support.

## **4. Key Features**

### **4.1 Client Mobile App**

* **Login & Signup:** Email, OTP, Google sign-in.
* **Business Setup:** Name, category, language.
* **WhatsApp Activation:**
  + Connect existing number.
  + Get new number via BSP provisioning.
* **Lead Capture:**
  + 📸 Camera OCR (snap laptop screen, business card, paper notes).
  + ✍️ Manual entry.
  + 🎙️ Voice dictation.
  + 📂 CSV upload.
* **Conversations:**
  + View live WhatsApp conversations with leads.
  + Auto-sync with WhatsApp Cloud API.
* **Wallet & Recharge:**
  + Display remaining credits.
  + Recharge packs (Starter, Growth, Enterprise).
  + Payment methods: Stripe/PayPal/UPI.
* **Reports & Analytics:**
  + Leads added.
  + Conversion rates.
  + Credit usage.

### **4.2 SaaS Backend (Server Side)**

* **Authentication Service** (multi-tenant).
* **Business Setup Service** (stores profile, category, language).
* **Number Provisioning Service:**
  + Integrate with WhatsApp BSPs (e.g., 360Dialog, Gupshup).
* **Bot Engine:**
  + Powered by LLM.
  + Supports tone & language configuration.
  + Uses RAG (Vector DB) for business-specific knowledge.
* **Lead Processor Service:**
  + OCR (Google Vision/AWS Textract).
  + Speech-to-Text for voice leads.
  + CSV ingestion.
* **Conversation Manager:**
  + Syncs with WhatsApp Cloud API.
  + Manages per-lead sessions.
* **Credit Management:**
  + 1 credit = 1 message.
  + Deduction on send/receive.
  + Auto-block when credits run out.
* **Moderation Layer:**
  + Filters inappropriate/illegal outbound content.
  + Alerts admin on flagged messages.
* **Billing Service:**
  + Stripe/PayPal/UPI integration.
  + Auto-recharge options.

### **4.3 Admin Panel**

* Tenant management.
* Credit adjustments.
* Abuse monitoring (logs of flagged content).
* Usage reports.

## **5. Integrations**

* **WhatsApp Cloud API / BSP** (360Dialog, Gupshup, Twilio).
* **Vector DB** (ChromaDB, Pinecone, or Weaviate) for RAG.
* **OCR Service** (Google Vision, AWS Textract).
* **Speech-to-Text** (Google Speech API, Whisper).
* **Payment Gateways** (Stripe, PayPal, Razorpay/UPI).
* **Content Moderation** (OpenAI Moderation, Perspective API).

## **6. Functional Flow**

### **6.1 Onboarding**

1. User downloads app → login.
2. Enters business details.
3. Activates WhatsApp number.
4. Gets free trial credits.
5. Starts capturing leads.

### **6.2 Lead Conversion**

1. Owner captures lead (photo/voice/CSV).
2. System parses data → stores in DB.
3. WhatsApp bot sends initial template message.
4. Conversation continues (LLM + RAG).
5. Credits deducted per message.

### **6.3 Wallet Recharge**

1. Owner opens wallet screen.
2. Chooses credit pack.
3. Pays via Stripe/PayPal/UPI.
4. Credits instantly added.

## **7. Non-Functional Requirements**

* **Scalability:** Support 10k+ concurrent conversations.
* **Security:**
  + End-to-end encryption via WhatsApp.
  + Secure auth (OAuth2/JWT).
  + Data privacy compliance (GDPR/DPDP).
* **Reliability:** 99.9% uptime.
* **Performance:** <2s response latency.
* **Compliance:** Strict adherence to WhatsApp Business Policy.

## **8. Constraints & Assumptions**

* Each business gets one WhatsApp number (not one per lead).
* Only approved WhatsApp templates used for outbound initiations.
* Free trial limited to 200–500 credits.
* Some markets may require **business KYC** for number activation.

## **9. Success Metrics**

* Onboarding time < 2 minutes.
* 90%+ SMBs can start sending messages without technical help.
* Monthly churn < 10%.
* Viral adoption via ease-of-use (photo OCR, voice capture).