CALL CENTER AI AUTOMATION – SCOPE DOCUMENT

For Development Team

1. Project Overview

This project aims to build an **AI-powered Call Center Automation System** that answers customer calls through an automated AI voice assistant. The system is designed to significantly reduce the load on human agents by automatically responding to **common, repeated, and predictable customer inquiries**.

When a customer calls the call center:

1. **AI answers the call first.**
2. The AI greets the customer, recognizes intent, and provides answers to FAQs.
3. If the AI detects a complex, sensitive, or non-standard inquiry,
   → **The call is automatically transferred to a human agent**.
4. All call logs, transcripts, and metadata will be stored for future analysis.

This solution ensures **higher efficiency**, **reduced call volume to agents**, **lower operational expenses**, and **faster customer response**.

2. Objective of the Project

The primary objectives are:

- **Automate 60–80% of incoming call inquiries** by using AI.
- Reduce workload on human agents by handling repetitive questions through AI.
- Improve service quality through consistent and immediate response.
- Provide seamless “AI → Human agent” transfer for complex calls.
- Enable the company to scale operations without increasing call center staff.
- Build a modern, flexible, and scalable call automation system.

3. Project Scope

This scope covers:

3.1 AI Call Handling

- AI to answer incoming calls automatically.
- NLP-based intent recognition.
- Response generation trained on a provided FAQ dataset.
- Voice generation with natural, human-like tone.
- Ability to handle:
    - Billing questions
    - Service inquiries
    - Appointment requests
    - Status checks
    - General support questions
- Multi-language support (optional future phase).

3.2 Human Agent Transfer

- Identify when human intervention is needed.
- Real-time call transfer from AI to a human agent.
- Smooth bridging of the call without dropping.

3.3 Integrations

- Integrate with third-party call center/telephony solutions.
- Connect with CRM for logging customer details.
- Use secure APIs for sending/receiving data.

3.4 Backend Portal

Developer should build a backend for:

- FAQ dataset uploading/editing.
- Agent availability management.

- Logs: transcripts, audio, call duration, customer intent.
- AI performance statistics.

3.5 Analytics

- Track number of calls answered by AI.
- Call deflection rate (AI vs Human).
- Problem categories asked the most.
- Success rate of AI responses.

3.6 Third-Party AI Platform Integration

The developer must evaluate third-party solutions and propose the best one.

Suggested tools (from initial guidance):

- **Convin AI** – AI analytics, Aircall integration
- **Salesforce Service Cloud Voice** – High-level automation, built-in AI
- **3CX** – Call queue management + AI add-ons
- **VICIdial** – Open-source call handling
- **FreePBX** – Open-source VoIP + module support

Developer must propose **one recommended tool** with justification based on:

- Cost
- API flexibility
- AI capabilities
- Scalability
- Ease of customization
- Reliability

4. High-Level System Architecture

Incoming Call → Telephony System → AI Engine → NLP/Intent Recognition → Response Generation → Voice Output to Customer → Transfer to Human (if needed) → CRM Logging → Analytics Dashboard

5. Functional Requirements

5.1 AI Interaction

- Greet user.
- Identify intent and ask follow-up if needed.
- Provide answers from the FAQ database.
- Understand user sentiment (optional).
- Decide whether to continue or escalate.

5.2 Transfer to Human Agent

- Trigger conditions:
    - User explicitly asks for an agent.
    - AI confidence score drops below a threshold.
    - Specific question categories (set manually).
- Transfer without call interruption.

5.3 Admin Panel

- Add/Edit FAQ knowledge base.
- View analytics dashboard.
- View call reports:
    - Call transcripts
    - Audio recordings (if supported by telephony provider)
    - AI confidence score
- Agent queue management.

6. Non-Functional Requirements

- **High availability (99%)**
- **Scalable** to handle peak call loads.

- **Data privacy and security compliance** (GDPR/ISO).
- **Low latency** for real-time conversation.
- **User-friendly interfaces**.

7. Developer Instructions

7.1 Research Requirements

The developer MUST:

1. Research the suggested platforms: below are only few samples
    - Convin AI
    - Aircall
    - 3CX
    - VICIdial
    - FreePBX
    - Salesforce Service Cloud
2. Explore additional modern solutions such as:
    - Twilio Voice + Twilio AI
    - Vonage Voice API
    - Talkdesk AI
    - Five9 Intelligent Virtual Agent
3. Provide a **comparison chart** with:
    - Features
    - Pricing
    - Limitations
    - API flexibility
    - Integration options
4. Recommend the most suitable platform based on project needs.

8. Customization Instructions for Developer

8.1 AI Training Module

- Create a structured FAQ template:
    - Question
    - Answer
    - Intent Tag
    - Category
    - Keywords
- Build/update training dataset continuously.
- Add fallback responses.

8.2 Telephony Integration

- Connect AI engine with call routing platform.
- Ensure SIP/VoIP integration.
- Configure DID numbers.

8.3 Workflow Customization

- Set up predefined rules for escalation.
- Configure agent queue priorities.
- Create smooth handover script.

8.4 Dashboard Development

- Use React or Vue for frontend (recommended).
- Use Node.js or Python for backend (recommended).
- Build analytics dashboard with filters:
    - Call direction
    - AI vs Human ratio
    - Intent categories

- Time period

8.5 API Integration

- CRM integration (custom or existing).
- Logging API for transcripts and metadata.

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9. Deliverables

The developer must deliver:

1. Full architecture diagram.
2. Full flow diagram (AI → Human transfer).
3. Admin panel (web-based).
4. Integrated telephony + AI engine.
5. FAQ training system.
6. Working prototype.
7. Production-ready system.
8. Source code repository with documentation.
9. Developer technical documentation.

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10. Timeline (proposed)

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11. Acceptance Criteria

- AI should answer at least **80% of calls** without human transfer (after training).
- Human transfer should not drop the call.
- Responses must be accurate and properly trained.
- Dashboard must show real-time analytics.
- System should run smoothly in production environment.