# **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. All 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 Al.
- 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

- Al 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.
- Al 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 Al
- 3CX Call queue management + Al 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
- Al 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 Al 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.
  - o Al 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
  - o Audio recordings (if supported by telephony provider)
  - Al confidence score
- Agent queue management.

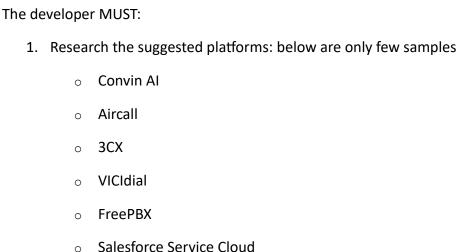
# **6. Non-Functional Requirements**

- 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



- 2. Explore additional modern solutions such as:
  - Twilio Voice + Twilio Al
  - Vonage Voice API
  - Talkdesk Al
  - o Five9 Intelligent Virtual Agent
- 3. Provide a **comparison chart** with:
  - Features
  - o Pricing
  - Limitations
  - API flexibility
  - Integration options
- 4. Recommend the most suitable platform based on project needs.

# 8. Customization Instructions for Developer

# 8.1 Al 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
  - Al vs Human ratio
  - Intent categories

o Time period

# 8.5 API Integration

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

### 9. Deliverables

The developer must deliver:

- 1. Full architecture diagram.
- 2. Full flow diagram (AI  $\rightarrow$  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.

# 10. Timeline (proposed)

### 11. Acceptance Criteria

- Al 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.