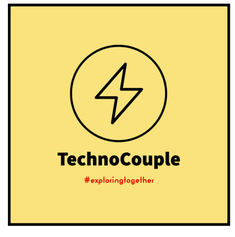
# WeCare - The Caretaker Assistant
## AI based Voicemail solution for baby sitter agency

#ChatGPT #Whisper #Completions #GenerativeAI #Voicemail #Telephony
#Twiml #Java #Springboot #MetaAPI #WhatsApp #SMS #IntentExtraction

Team Name : TechnoCouple



# Agenda

- ✦ Introduction
- ✦ Problem statement
- ✦ Proposed Solution
- ✦Technologies Used - API list
- ✦ Voicemail Treatment - Call Flow
- ✦ Conclusion

# Github and Video Link

- Github link - https://github.com/technocouple/technocouple-caretaker-assistant
- Video link - https://drive.google.com/drive/folders/1NBew2U0Xgtm04ubQszjLvZV92fowR6-D?usp=sharing

# ✦Problem Statement

Many business organisations have call center to receive voice calls during business hours and when the contact center agents are available. There are after hours (office closed) and busy hours (peak hours) during which agents might not be available causing calls to route to voicemail (VM).The voicemail box is monitored and sometimes is not. Even when it is monitored, voicemails are manually downloaded and/or listened to the voicemail on the voicemail box. Agents analyse the VM content to come up with an answer and provide the resolution to the user. This would have a huge impact on the business and turn around time for the customer in the fast paced world as there is a need for human intervention for analysing voicemail messages and query resolution. This takes agent effort and time which otherwise could have been well spent on resolving more complex issues.

# Proposed Solution

## ✦Solution

The voicemail analysis is an almost uncharted territory in contact center business. It has the potential to provide several data points about the user like sentiment, voiceprint for voice biometrics, user concern in natural language and free form, etc. When such a powerful source of data is combined with AI, the business improvement opportunities are endless. We are proposing to use the OpenAI API's like ChatGPT and Whisper API to come up with a unique solution to solve the business problem we talked about earlier.

When the agent is not available and the caller leaves the voicemail, we extract the voicemail, transcribe it using Whisper API, send the transcription to ChatGPT with a meticulously built prompt using prompt engineering, extract all the details like babysitting date, time etc. in JSON format. Query the EmployeeSchedule database to check the babysitter availability based on caller requirements and use the employee id to fetch employee details from cloud RedisJSON.

We generated baby sitter images using text-to-image API a.k.a Dall-E. The image and the details from RedisJSON are added to a document and then we generate a PDF dynamically.

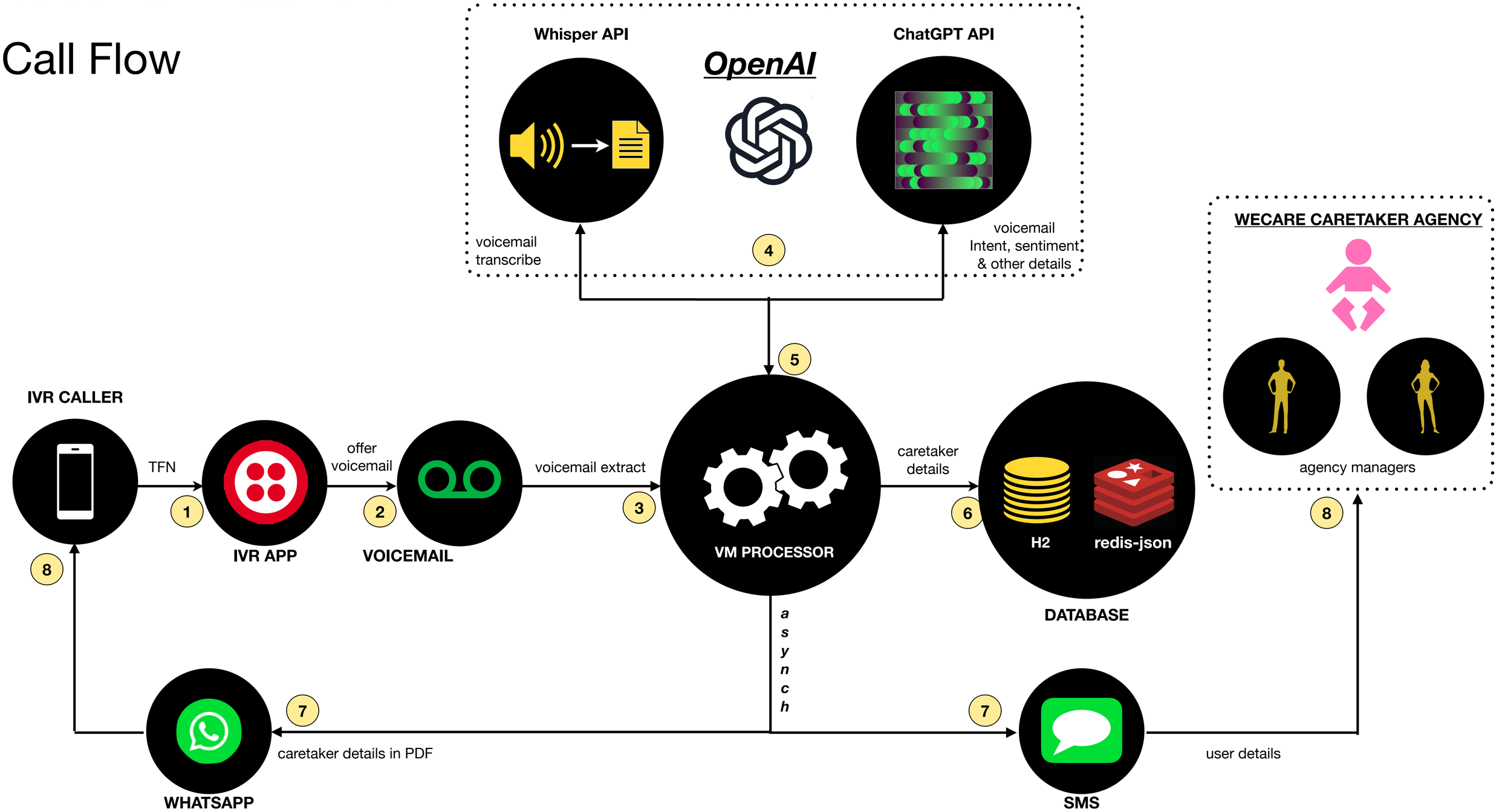
This PDF is then sent to the Customer WhatsApp number using Meta or Facebook Cloud API. The user information is then sent to the agency manager or supervisor as an SMS for alerting them to reach out to the user.

# Technologies Used

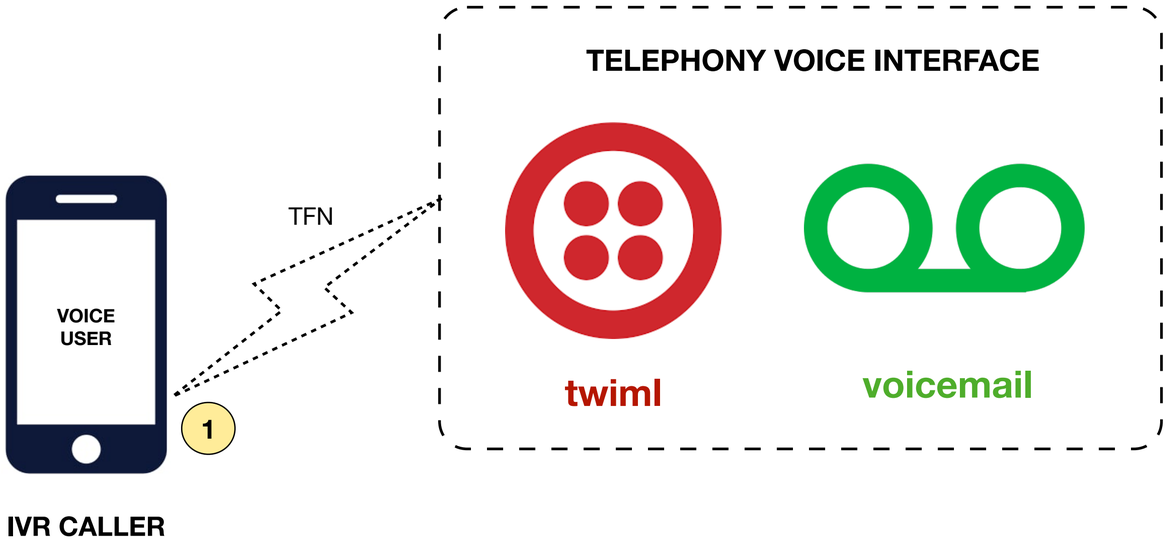
- OpenAI API’s : ChatGPT (turbo model), Whisper API, Dall-E
- Redis Cloud
- Java - Springboot
- Telephony - Twilio, twiml, Text-to-speech, voicemail, messaging service
- Meta cloud api - WhatsApp API
- iText library for PDF
- ngrok

# Voicemail Treatment

## Call Flow

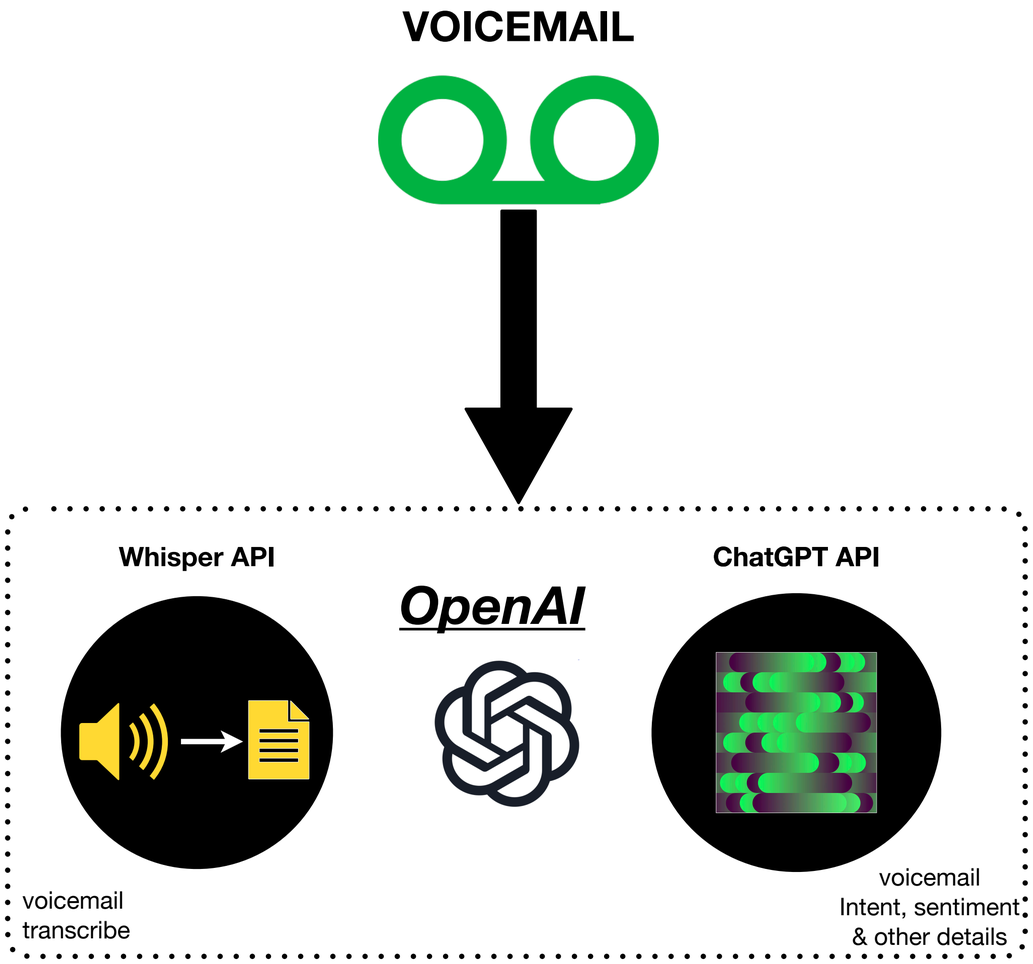


# Voicemail Treatment - Call Receiving




1. User looking for baby sitting or care takers would call the TFN.
2. The voice assistant greets the user & checks for available agent.
3. The voice assistant would offer voicemail to the user incase no agent is available to take the calls or if its after business hours, the voicemail message sounds like this -
“*Thank you for reaching out to WeCare caretaker agency. We are working on your request and will get back to you soon.*”

# Voicemail Treatment - transcribe and info extract using openAI




1. Voicemail from user would be extracted from the telephony platform

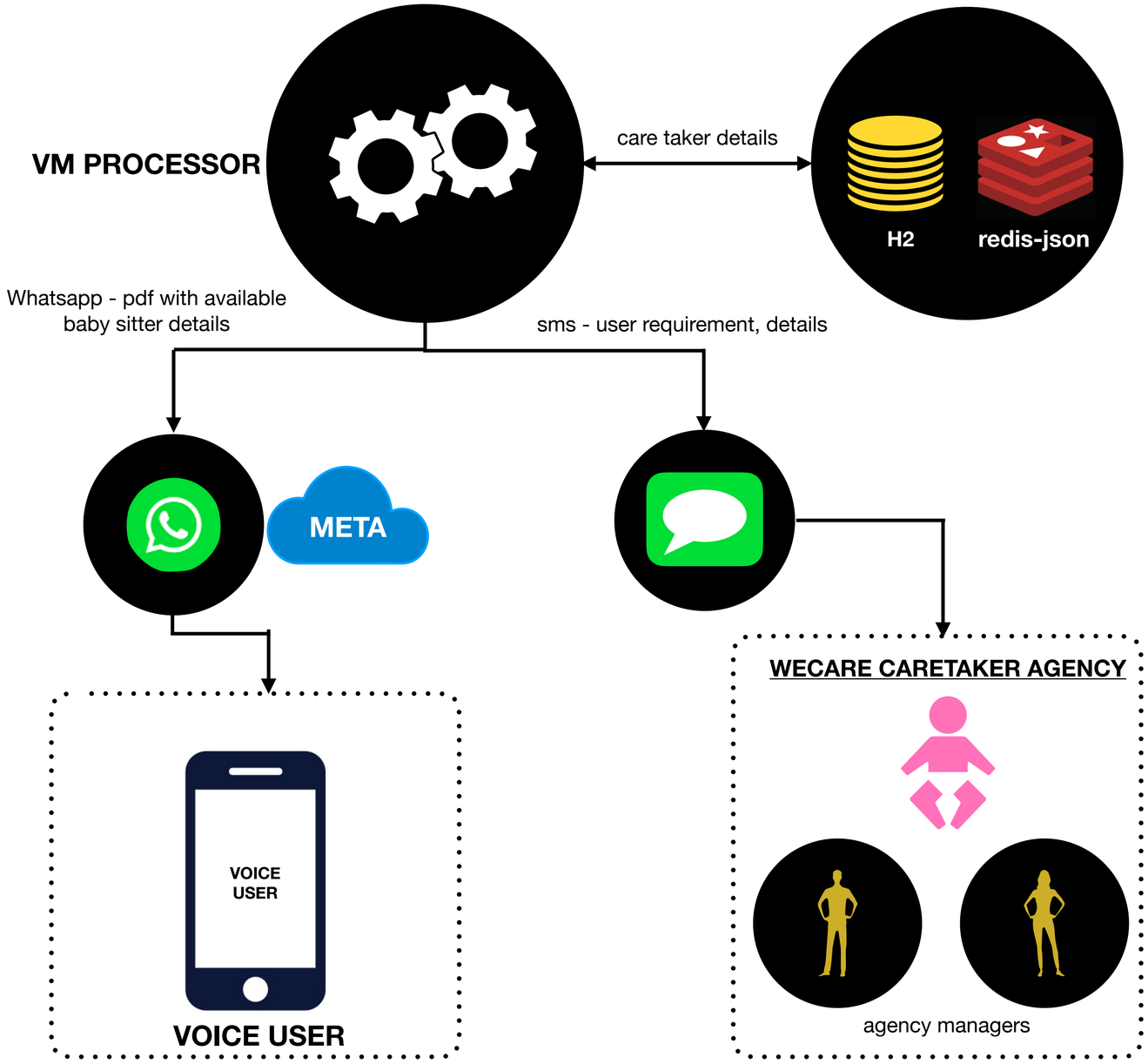
2. We are using Whisper API from OpenAI, to get the text out of the voicemail. The speech-to-text api/whisper api would transcribe the voicemail.

3. We then create a Prompt using the above transcription to extract information from the voicemail using Prompt Engineering.

   “The following utterance is a voicemail transcription requesting for a babysitter. As a professional business assistant, identify name, email, phone number, language, intent, sentiment analysis, baby's age in years or months, baby's gender, preferred gender of babysitter, babysitting start time (Convert to 24 hours format only), babysitting end time (Convert to 24 hours format only), day of week (Consider the year as 2023), zip-code in separate lines (Find the zip code if city and state is provided) and say \"NA\" if its not present.Send the response in JSON format.”;

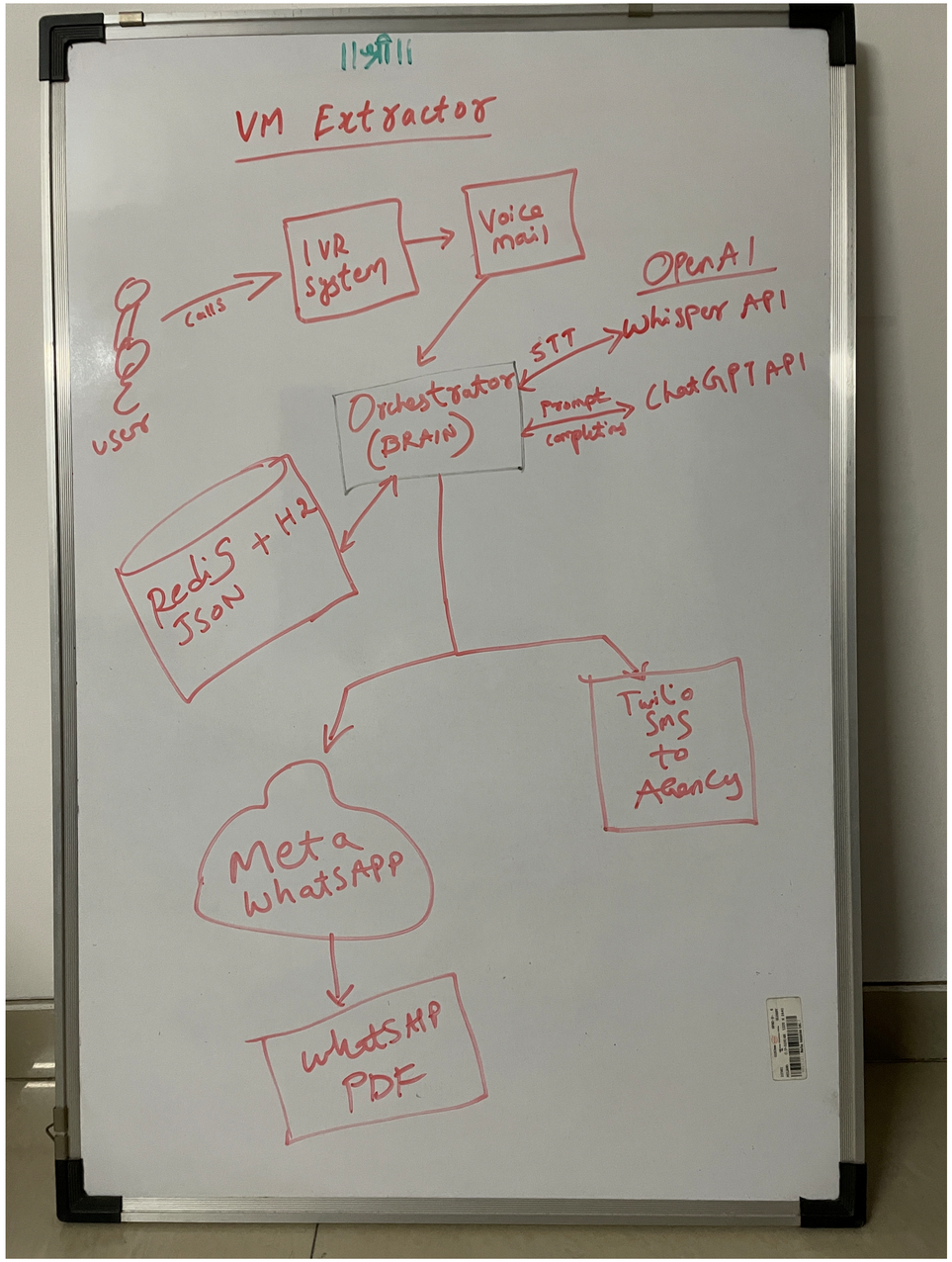
   We then call ChatGPT API with the above prompt to get back the extracted information in JSON format.

# Voicemail Treatment - Redis json, H2, Whatsapp ,SMS




1. VM Processor is the orchestrator of this app which controls and talks to other modules in this architecture.
2. First it uses openAI whisper API to get text from voicemail, then using prompt engineering extracts all information from the voicemail using OpenAI ChatGPT API.
3. We then create a Prompt using the above transcription to extract information from the voicemail using Prompt Engineering.
4. With the information available from ChatGPT response, we query H2 database to find the available caretaker employees which matches the user requirement.
5. Then we connect to Redis Cloud module redis-json to fetch the employee details for the filters and available employee/s.
6. The orchestrator then generates the image, adds the details fetched from redis-json to a PDF and sends it to the user who requested as a WhatsApp message including the PDF using Meta cloud API.
7. The other information obtained from ChatGPT API like intent, some entities gathered, sentimental analysis from the user voicemail is sent as an SMS to Caretaker agency managers. This helps the managers to track and act quickly even after business hours.

# Raw Architecture - Whiteboarding



# Conclusion

- We have used ChatGPT, Whisper API’s along with Redis JSON to bring a unique solution to agencies like baby sitter. This is just one example, this can be applied in many other organisations where voicemail is supported.This allows the business to work 24/7 and agency to track all the time.
- Redis Json helped us to store the Employee details in simple JSON format along with Image Id’s which we use in generating PDF runtime and send it to Customer as WhatsApp message using Meta cloud API. This can also be sent in Email for quick reference and options available for the user even during the after business hours.
- We have used H2 database to store the employee schedule.This unique solution we believe helps small organisation to big organisation.
- Voicemail was always there but blending with OpenAI APIs made it look very different and very useful make the business work 24/7