**WhatsApp-Driven Google Drive Assistant (n8n workflow)**

**Objective**

Create an n8n workflow that listens to WhatsApp messages and performs Google Drive actions such as listing files, deleting, moving, and summarising documents in a folder.

**Project Overview**

This project integrates:

* User Interaction Channel: WhatsApp messages sent by a user.
* Communication Service: Twilio WhatsApp Sandbox forwards incoming messages to a webhook endpoint.
* Automation Engine: n8n processes the messages, runs logic based on commands, and integrates with Google Drive / OpenAI.
* Containerization & Deployment: Docker runs n8n in an isolated, portable environment, while ngrok exposes it for webhook access.
* APIs & Data Processing: Google Drive API to access and manage files, OpenAI API to generate summaries or process text.
* End-to-End Feedback: The automation sends responses back to the user on WhatsApp in real-time.

**Purpose**

Automates manual tasks like:

* Listing Google Drive files by folder.
* Summarizing document contents with AI.
* Moving or deleting files remotely via simple WhatsApp commands.

**Docker & n8n**

* Docker encapsulates your n8n app along with its runtime (Node.js environment, dependencies, configuration).
* n8n: A no-code/low-code automation tool where workflows are created visually.
* Using Docker Compose makes running n8n a one-command process:

Starts the container

Applies environment variables

Ensures the same setup works on any OS without “dependency hell.”

**ngrok**

* Problem: Localhost (127.0.0.1) is not accessible from Twilio's cloud servers.
* Solution: ngrok creates a secure HTTPS tunnel to your local http://localhost:5678.
* Once started (ngrok http 5678), it gives you a unique public HTTPS URL like: https://xyz123.ngrok-free.app
* This URL forwards Twilio's webhook requests to your n8n running locally.
* Note: Each time you restart ngrok, the URL changes unless you have a paid static domain. This means you must update Twilio settings to the new URL when it changes.

**Twilio WhatsApp Sandbox**

* Twilio’s sandbox acts as your test environment for the WhatsApp API.
* You join the sandbox through your phone by sending a specific join code.
* You configure “When a message comes in” in the sandbox settings to point to your ngrok webhook.
* Twilio then POSTs message data as JSON to your webhook whenever someone sends a WhatsApp message to your sandbox number.
* Advantage: No need to go through WhatsApp Business API approval process for testing.

**Google Drive and OpenAI Integration**

1. Google Drive OAuth2 Credentials:

* Authorizes n8n to interact with your Google Drive files.
* Scopes used typically allow list, download, delete, and move operations.

1. Operations:

* “LIST” command → Google Drive List Files node queries and returns file metadata.
* “DELETE” → Deletes file by ID.
* “MOVE” → Changes file’s folder location.

1. OpenAI API:

* “SUMMARY” command → Fetches file content (text or from PDF via parsing) and sends it to OpenAI’s text model.
* Returns AI-generated summaries as plain text to be sent over WhatsApp.

**Workflow Logic and Data Flow**

Step-by-step execution when a message is sent:

1. **Webhook Node Trigger:**

Receives an HTTP POST from Twilio containing

{

"From": "whatsapp:+919XXXXXXXXX",

"Body": "LIST /Project reports"

}

1. **Parse Command Node:**

Custom JS splits this

* action: "LIST"
* argument: "/Project reports"

1. **Command Routing (Switch / IF Nodes):**

* If action = "LIST", go to Google Drive List node.
* If "SUMMARY", fetch files and send to OpenAI Summary node.

1. **Target API Node Execution:**

* Google Drive/OpenAI nodes perform the requested operation.

1. **Format Response Node:**

* Takes raw result and formats it into a human-friendly message.

1. **Send WhatsApp Response Node:**

* Posts result back to Twilio API endpoint to send to the user.

1. **Log Data:**

* Store in database/log file: message source, command, timestamp, result.

**Credentials & Environment Variables**

1. store in .env:

* Keeps API keys out of code/workflow for security.
* Easy to change without modifying workflow nodes.

1. Example Mapping:

* Google OAuth creds → Used in Google Drive nodes.
* OpenAI API key → Used by HTTP Request or dedicated OpenAI node.
* Twilio Auth Token/SID → Used for sending messages.

1. In n8n:

* Credentials are encrypted in n8n’s database.
* Nodes reference them by name.

