Task 1 – AI-Powered Inbound Call Booking Assistant

📅 Date 🔗

Jul 3, 2025

👤 Participants 🔗

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💡 [Task 1 documentation link](#) 🔗

🧠 Project Overview 🔗

Workflow Name: AI-Powered Inbound Call Booking Assistant

Goal: Automatically handle inbound calls, transcribe audio to text, extract booking intents using LLM, create booking in Google Calendar, and log data in Airtable CRM.
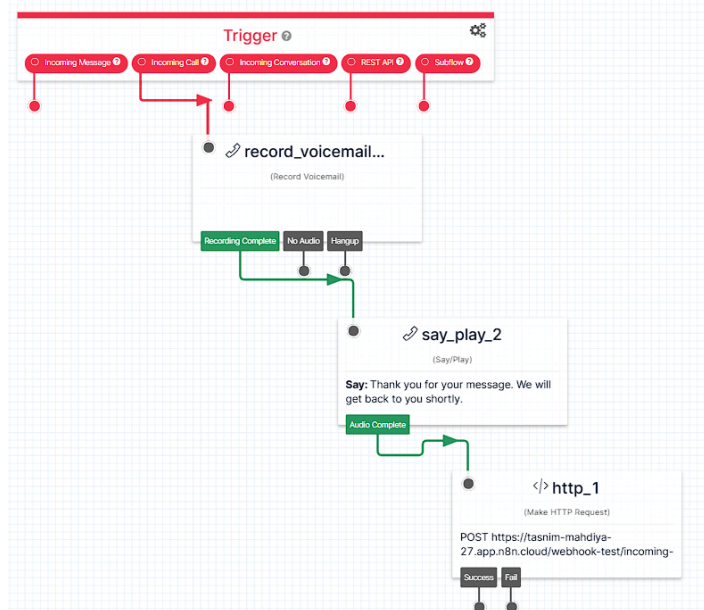
Expected Flow:

`Inbound Call` → `Speech-to-Text (Deepgram)` → `LLM (DeepSeek)` → `Booking System (Google Calendar)` → `CRM System (Airtable)`

🌐 System Architecture 🔗

```
1  flowchart TD
2    A[Twilio Inbound Call] --> B[Webhook Trigger (n8n)]
3    B --> C[Deepgram Speech-to-Text]
4    C --> D[LLM - DeepSeek AI (Intent Extraction)]
5    D --> E[Code Node - Data Cleanup & Fixes]
6    E --> F[Google Calendar - Create Booking]
7    E --> G[Airtable - Log Entry]
8
```

📲 Twilio studio flow 🔗

Complete Twilio studio flow

Call record length and silence

HTTP request body function

🔧 Key Node Descriptions 🔗

1. Twilio Webhook (Production) 🔗

- **Type:** HTTP POST
- **Configuration:** Twilio Console > Phone Number > Voice > Webhook > Custom URL (Production URL from n8n)

2. Deepgram Node 🔗

- **Input:** Audio stream from inbound call
- **Output:** English/Malay transcript via `results.channels[0].alternatives[0].transcript`
- **Multilingual Enabled:** Yes

3. LLM Generator Node (DeepSeek) 🔗

Prompt JSON:

```
{
  "model": "deepseek-chat",
  "messages": [
    {
      "role": "system",
      "content": "You are a helpful booking assistant who understands both Malay and English..."
    },
    {
      "role": "user",
      "content": "{{ $json.results.channels[0].alternatives[0].transcript }}"
    }
  ],
  "temperature": 0.2
}
```

```
15
```

4. Code Node: Date Correction + ISO Time Formatting 🔗

```
1  const raw = $json.choices[0].message.content;
2  const clean = raw.replace(/```json\n?/, '').replace(/```/, '').trim();
3  const parsed = JSON.parse(clean);
4
5  if (parsed.date === "tomorrow") {
6    const tomorrow = new Date();
7    tomorrow.setDate(tomorrow.getDate() + 1);
8    parsed.date = tomorrow.toISOString().split('T')[0];
9  } else {
10   const fixed = new Date(parsed.date);
11   fixed.setFullYear(2025);
12   parsed.date = fixed.toISOString().split('T')[0];
13 }
14
15 const localDateTime = new Date(`${parsed.date}T${parsed.time || '10:00'}:00+08:00`);
16 parsed.formattedDate = localDateTime.toISOString();
17
18 return {
19   json: parsed
20 };
21
```

5. Google Calendar Node 🔗

- **Start:** `{{ $json.formattedDate }}`
- **End:** `{{ new Date(new Date($json.formattedDate).getTime() + 60*60*1000).toISOString() }}`
- **Description:** Dynamic content based on AI parsing
- **Time Zone:** UTC+8 (Malaysia)

⚠️ **Note on Time Behavior:**
Although the AI extracts and formats the booking time correctly in Malaysia Standard Time (UTC+8), Google Calendar may display it with timezone offset adjustments in the backend (e.g., shifting to UTC time). This does **not** affect the actual booked time shown on the calendar front-end, which remains accurate for Malaysian users. The logic ensures correct day and hour despite backend timezone conversions.

6. Airtable CRM 🔗

- Logs:
  - Customer (Phone)
  - Date & Time (Booking)
  - Branch (Optional)
  - AI Summary

◆ Limitations 🔗

Type	Description

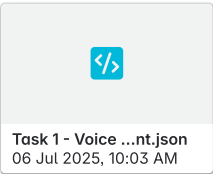| ❌ Voice AI Reply	AI does not speak back to the caller due to response complexity
⏱️ Limited Call Time	Call ends after ~1 minute due to Deepgram audio limits
❓ No Response-to-Webhook	Not implemented for Twilio verbal reply
❌ Incorrect Year from LLM	Code node corrects 2024 to 2025
⏰ UTC Offset Visible	Google Calendar UTC+8 shows +1 day in backend

✨ Highlights 🔗

- Humanlike conversation from transcript using DeepSeek
- Multilingual: Malay + English auto-detection
- Accurate calendar booking via time zone correction
- Airtable integration for complete CRM visibility

📚 Future Improvements 🔗

- Add **Text-to-Speech** response to users
- Implement **Webhook response** to speak via Twilio
- Enable **Session History Logs** with richer detail
- Allow **Dynamic conversation** with booking clarification steps

📌 n8n Workflow: 🔗

Task 1 - Voice ...nt.json
06 Jul 2025, 10:03 AM

Output Example 🔗

📌 Google Calendar Booking 🔗

```
1  Booking intent from AI assistant.
2  Date: 2025-07-06
3  Time: 15:00
4  Branch: `kuala Lumpur
```

Airtable record of the booking

Google Calendar booking event