

Executive Summary: This portfolio document outlines production-grade workflow automation architectures, conversational AI voice systems, and custom API integrations engineered for modern businesses. Each architecture is built to eliminate human error, operate autonomously 24/7, guarantee data integrity across CRMs, and scale client operations seamlessly.

SYSTEM CASE STUDY 01

Multi-Location AI Voice Appointment Booking Engine

- n8n Core
- Retell AI
- GoHighLevel (LeadConnector)
- Multi-Branch Calendars
- JSON Data Routing

BUSINESS CHALLENGE:

A multi-location healthcare and service enterprise operating across three distinct branch offices (Douglas, Tifton, and Valdosta) suffered significant revenue drop-off from missed inbound phone calls and front-desk scheduling bottlenecks. They required an autonomous voice assistant to answer calls instantly, extract caller details, dynamically check branch-specific staff availability, and book confirmed appointments in real time without human staff.

SYSTEM ARCHITECTURE & TECHNICAL EXECUTION:

Workflow 1: Contact Creation & Caller Data Capture

- The Retell AI voice agent conducts natural inbound discovery, collecting caller name, phone number, email, address, and target office branch.
- Dispatches a webhook payload to n8n, which queries the GoHighLevel API to perform automated duplicate validation.
- If an existing record is detected, it returns the existing Contact ID; if new, it instantiates an enriched contact profile.

Workflow 2: Dynamic Multi-Location Slot Retrieval

- Routes caller location parameters (Douglas, Tifton, or Valdosta) dynamically to the corresponding location calendar ID in GoHighLevel.
- Generates a rolling 14-day scheduling query window and fetches live open slots directly via the LeadConnector API.
- Transforms and aggregates raw calendar timestamps into structured JSON, allowing the AI agent to speak natural scheduling availability to the caller in sub-second response times.

Workflow 3: Automated Reservation & Post-Call Sync

- Receives the confirmed booking timestamp from the caller and locks the appointment in GoHighLevel under the proper branch calendar.
- Validates scheduling status, triggers instant client SMS/email confirmations, and binds the complete call recording and transcript directly into the CRM contact timeline.

KEY DELIVERABLES & BUSINESS IMPACT:

Zero Reception Overhead 100% Autonomous 24/7	Calendar Routing Accuracy 3 Branches Unified	CRM Hygiene Zero Duplicate Contacts
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Inbound Voice Setter & Automated CRM Transcription Pipeline

VAPI Voice Engine

GoHighLevel (GHL)

n8n Engine

Real-Time Intent Parsing

Speech-to-CRM Sync

BUSINESS CHALLENGE:

Sales and support teams routinely lose context from inbound phone leads when appointment notes are entered manually or incompletely. The client needed an AI-driven telephone appointment setter that could accurately classify caller intent, book consultations, and automatically produce structured conversation logs inside their CRM.

SYSTEM ARCHITECTURE & TECHNICAL EXECUTION:

Real-Time Intent Recognition & Calendar Booking:

- Connected VAPI with GoHighLevel via an n8n webhook relay to process real-time voice streaming.
- The system evaluates caller intent dynamically: if the caller inquires about open slots, it queries GHL calendar availability; if ready to lock a time, it writes the appointment instantly to the CRM.
- Validates contact information in flight, linking caller metadata directly to the scheduled calendar event.

Post-Call Intelligence & Automated CRM Transcription:

- Immediately upon call completion, VAPI pushes the complete audio payload and transcription data to n8n.
- The workflow sanitizes the transcript, formats an executive summary, and appends the notes directly to the contact's GHL profile.
- Sales representatives can review full conversational context within seconds without listening to audio recordings.

KEY DELIVERABLES & BUSINESS IMPACT:

Speed to Booking < 2 Minutes Average	Documentation Rate 100% Calls Transcribed	Integration Type Bi-directional Webhook
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Autonomous B2B Prospecting & Decision-Maker Enrichment Engine

- Apollo.io API
- Google Sheets Real-Time Sync
- n8n Automation
- Data Verification
- Deduplication Logic

BUSINESS CHALLENGE:

B2B outbound sales teams spend up to 40% of their prospecting bandwidth manually hunting for verified corporate emails, locating C-suite personnel on LinkedIn, and fixing duplicate entries across messy prospect sheets.

SYSTEM ARCHITECTURE & TECHNICAL EXECUTION:

- Event-Driven Ingestion & Organization Verification:**

 - An n8n listener monitors the master Google Sheet in real time for incoming domain or company names.
 - Validates target organizations against Apollo.io's enterprise API, verifying active operational status, corporate domain, employee headcount, and industry classification.
- Intelligent Decision-Maker Extraction & Data Hygiene:**

 - Applies rule-based filtering to isolate key decision-makers (Founder, Owner, CEO, Managing Director, VP).
 - Extracts verified corporate emails, direct phone numbers, and LinkedIn profile URLs.
 - Executes an automated deduplication check against the master database, appending only clean, non-redundant records ready for immediate outbound sales sequences.

KEY DELIVERABLES & BUSINESS IMPACT:

Manual Research Time Reduced to 0 Hours	Data Accuracy Verified Corporate Emails	Scalability 1,000+ Records / Day
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SYSTEM CASE STUDY 04

AI-Powered Facebook Ads Performance & Budget Scaling Auditor

- Meta Marketing API
- OpenAI GPT Analysis
- n8n Scheduled Cron
- Media Buying Logic
- Executive Digest

BUSINESS CHALLENGE:

Marketing agency leadership and media buyers face cognitive fatigue analyzing high volumes of Facebook Ads campaign data every week. Delays in identifying unprofitable ads or recognizing winning creatives result in wasted ad spend and missed scaling windows.

SYSTEM ARCHITECTURE & TECHNICAL EXECUTION:

- Scheduled KPI Extraction & Pre-Processing:**

 - An automated n8n cron scheduler executes every Monday, polling the Meta Graph API for rolling 7-day performance metrics (Spend, CPC, CTR, Frequency, Cost Per Acquisition, ROAS).
 - Cleans and structures raw performance numbers into a consolidated JSON payload.
- AI Media Buyer Heuristic Analysis & Email Dispatch:**

 - Routes the structured ad data to an AI analysis engine pre-programmed with expert media buying rules.
 - Generates an actionable 3-tier strategy matrix:
 1. **Aggressively Scale:** Top-performing ad sets with low CPA and healthy frequency.
 2. **Kill / Pause:** Underperforming creatives exceeding cost tolerance thresholds.
 3. **Creative Experiments:** High-CTR angles requiring fresh creative or headline testing.
 - Converts recommendations into an executive HTML summary emailed directly to stakeholders.

KEY DELIVERABLES & BUSINESS IMPACT:

Weekly Reporting Time 4+ Hours Saved / Account	Optimization Cadence Weekly Autonomous Audit	Decision Speed Instant Action Items
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Technical Capabilities & Engineering Standards

- Every system I design and deploy adheres to strict enterprise-grade standards:
- **Modular Workflow Blueprints:** Clean, color-coded n8n workflow architectures with dedicated error catchers and webhook fallbacks.
 - **Native & Custom API Handlers:** Direct integration via HTTP Request nodes, OAuth authentication, and custom Python/JavaScript parsing where standard nodes fall short.
 - **Production Handover:** Full workflow JSON export, environment configuration instructions, and screen-recorded Loom video documentation for easy team maintenance.

Ready to discuss your automation infrastructure? Reach out via Workreap or email at usmannajeebx@gmail.com.