

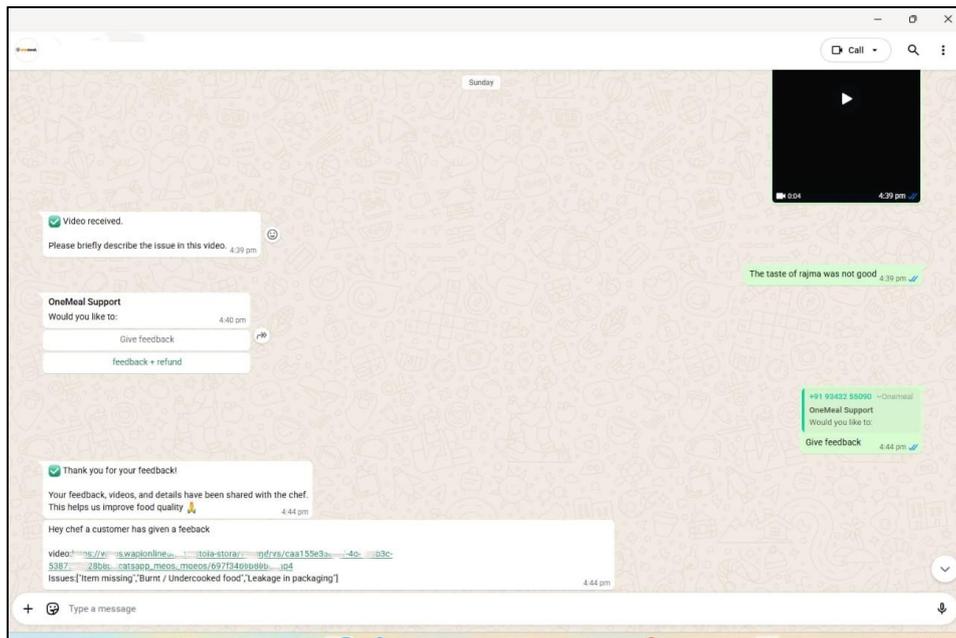
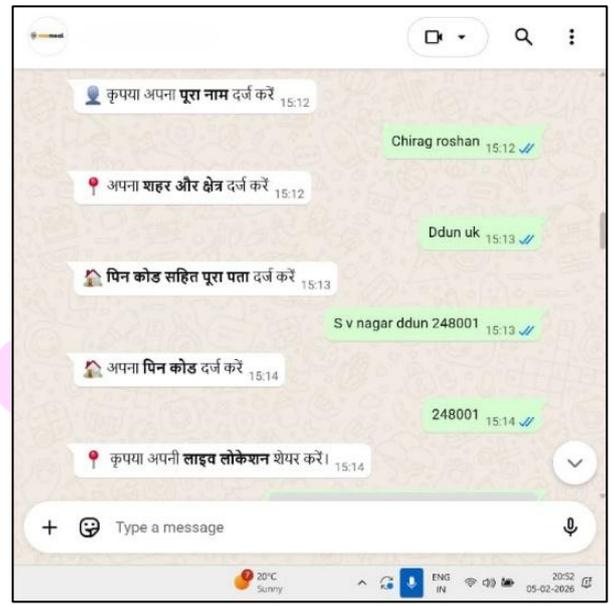
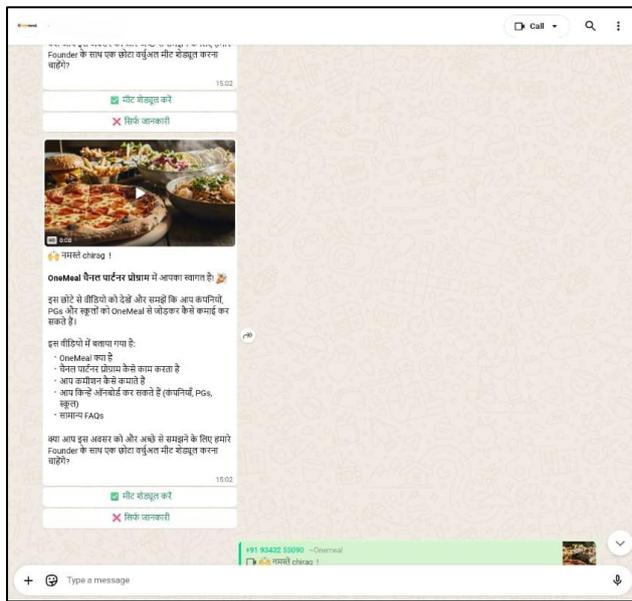
CASE STUDY: ONEMEAL AUTOMATION SUITE

Orchestrating an AI-Driven Business Backbone through Multi-Agent Automation

Project Status: Final Testing & QA Phase (Nearing Delivery)

Timeline: 8–9 Weeks (Intensive Development & Iterative Expansion)

Architecture: 4 Interconnected AI Agents (Chef, Customer, Rider, Channel Partner)



1. PROJECT OVERVIEW & CORE PHILOSOPHY

The **OneMeal Automation Suite** is a high-complexity AI ecosystem designed to replace a manual, fragmented operational model with a self-sustaining digital nervous system. In an industry where logistics and stakeholder management are massive bottlenecks, OneMeal was engineered to automate the entire lifecycle of Chefs, Customers, Riders, and Partners.

The core philosophy was "**Operational Autonomy.**" We didn't just build chatbots; we built **AI Employees**. These agents handle everything from lead qualification via Meta ads to real-time order confirmation and support, allowing the business to scale infinitely without increasing manual staffing costs.

2. THE STRATEGIC VISION (The "Idea")

The vision for OneMeal was to eliminate the "Human Error Factor" in quick-commerce. Our strategic response focused on:

- **End-to-End Automation:** Replacing manual calls, WhatsApp replies, and data entry with intelligent, rule-based, and generative AI flows.
 - **Frictionless Onboarding:** Reducing the chef and partner onboarding time from days to minutes through automated interviews and contract generation.
 - **Proactive Problem Solving:** Implementing automated IVR (Voice) fallbacks for riders and chefs to ensure 100% order fulfillment.
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3. THE STRATEGIC SQUAD (Meet the Team)

- **Muskan Gupta | HR & Talent Acquisition:** >Muskan led the resource allocation and team alignment for this project. Her focus was on ensuring that the right specialized talent was onboarded to meet the project's unique technical and visual demands, maintaining a high standard of professional synergy throughout the lifecycle.
 - **Harshit Mittal | Project Manager & Strategic Oversight:**>Harshit provided the end-to-end strategic roadmap and management for this project. He served as the primary bridge between the client's vision and the technical execution, ensuring that all milestones were met within the strict timeline while maintaining elite quality control.
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A project of this complexity required a modular approach, led by a dedicated team of specialists who managed the intersection of frontend aesthetics and backend stability.

- **Chirag | Lead Automation Engineer (Chef & Partner Bots):**

Chirag was responsible for the project's most complex pillars. He engineered the automated Chef onboarding flow, the 13-point AI data extraction logic, and the end-to-end Channel Partner lifecycle, including the e-signature contract loop.

- **Hussain Amman | AI Support Architect (Customer Bot):**

Hussain focused on the Customer Support ecosystem. He developed the triage logic, the knowledge-base search engine, and the video-evidence collection module, ensuring that customer queries are resolved with zero human intervention.

- **Shagun | Logistics Automation Specialist (Rider Bot):**

Shagun architected the Rider engagement flow. Her focus was on the verification logic, the "Ghost Tracking" performance sheet, and the high-stakes IVR fallback system for order confirmations.

4. TECHNICAL STACK & RATIONALE

- **Workflow Engine: n8n (Self-hosted).** The central nervous system for connecting 4 bots and the Admin Panel.
- **AI Brain: OpenAI (GPT-4) via OpenRouter.** Switched from Gemini to ensure higher reliability and reasoning capabilities for menu generation and support.
- **Messaging & Voice: WhatsApp Business API & IVR Integration.** The primary touchpoints for all stakeholders.
- **Backend Sync: RESTful APIs.** Ensuring that the "Source of Truth" remains the OneMeal Admin Panel.

5. CORE MODULES: THE 4 AI AGENTS

- **A. The Chef Bot:** Automates lead capture, schedules Google Meets, extracts 13 data points using AI, and auto-generates 30-day menus.
 - **B. The Customer Bot:** Verifies active customers, categorizes issues, and uses GPT-Vision to analyze screenshots for instant resolution.
 - **C. The Rider Bot:** Manages order confirmations with 20-minute cutoffs and triggers automated IVR calls for non-responsive riders.
 - **D. The Partner Bot:** Handles introductory video flows, Calendly integration, and auto-generates e-signable contracts.
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6. MAJOR TECHNICAL HURDLES & ADAPTIVE STRATEGIES

- **The "Learn-then-Build" Curve:** This tech stack was entirely new to the team. They spent the initial weeks mastering n8n and AI state management before building the production-ready agents.
 - **Iterative Scope Creep:** The project timeline was extended to 8-9 weeks due to frequent new feature requests (e.g., video fulfillment proof and advanced menu editing) which required constant refactoring of the core logic.
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7. DEVELOPER DEEP-DIVE: CRITICAL ISSUES ENCOUNTERED

A. AI API & Rate Limit Migration

The Challenge: Initially, the team used **Gemini** but faced significant stability issues and rate-limiting bottlenecks during high-volume testing. **The Solution:** After multiple iterations with **OpenRouter**, the team eventually migrated to **OpenAI's native API** to ensure sub-second response times and enterprise-grade reasoning.

B. State Management & Context Retention

The Challenge: Keeping track of a user's progress across multiple days and messages (e.g., "Where did the chef leave off in the onboarding?") was technically taxing. **The Solution:** The developers engineered a **Centralized Context Layer** in n8n, ensuring the user's "state" is saved and retrieved from the Admin Panel API in real-time.

C. The Contract-Sign "Copy-Back" Bug

The Challenge: **Chirag** faced a major roadblock where the bot struggled to pull the signed copy of the contract back into the system to trigger the "Activation" phase. **The Solution:** He refactored the **Webhook listener logic**, creating a persistent check that waits for the signature confirmation before automatically updating the Admin Panel and notifying the chef.

D. WhatsApp API & Implementation Complexity

The Challenge: Implementing the WABA API and managing webhook failures from providers like MTech caused significant downtime. **The Solution:** The team built an **Idempotent Webhook Handler**, which ensures that even if an API ping is delayed, the bot doesn't duplicate messages or lose user data.

8. IMPACT & CURRENT STATUS

- **80% Manual Labor Reduction:** The suite has successfully automated the most time-consuming parts of the business.
- **Scalable Infrastructure:** OneMeal is now equipped with a digital workforce ready for national expansion.

- **Final Delivery Phase:** The project is currently in its **Final Testing & Polishing** stage, with delivery scheduled for the coming days.

9. MANAGEMENT FEEDBACK

"Building four interconnected AI agents from scratch while learning a new stack is a monumental achievement. Chirag, Hussain, and Shagun have shown incredible resilience in handling shifting requirements and technical bottlenecks to deliver a truly future-ready automation suite." — **Management, WebArclight**

A large, semi-transparent watermark of the WebArclight logo is centered on the page. The colors of the letters match the logo in the top left corner.