



Project Case Study: RedGiraffe – Scalable AI Agent Infrastructure Across Teams

This case study details the implementation of a modular and intelligent agentic infrastructure for RedGiraffe, encompassing sales, support, finance, QA, and marketing departments. The system is designed to operate with minimal human intervention, integrating logic-based automation with LLM-driven decision-making to achieve hyper-efficiency at scale. The project involved the deployment of over 20 agents, orchestrated through collaborative workflows and leveraging technologies such as n8n, Supabase, Mistral, LLaMA3, Redis, and Chroma.

Project Scope & Objective

RedGiraffe sought to eliminate manual overhead, decrease response times, and ensure process compliance across its various business units. This was to be achieved through the deployment of intelligent agents specifically designed for function-specific automation. The goal was to create a system where over 20 agents could operate collaboratively through orchestrated workflows, leveraging a combination of logic-based rules and advanced LLM capabilities.

Functional Overview

The agentic infrastructure was designed with modularity in mind, allowing for easy scaling and adaptation to changing business needs. The agents were categorized into functional groups, each addressing specific challenges within their respective departments.

Sales Automation Agents

These agents focused on automating the lead generation, outreach, and follow-up processes, significantly reducing the manual effort required by the sales team.

1. ICP Web Scraper [Hunter 1]

- **Function:** Weekly scraping of Crunchbase and Angellist to gather data on Ideal Customer Profile (ICP) companies.
- **Technology:** Puppeteer, Playwright, Supabase.
- **LLM Used:** None.
- **Process:** The agent automatically navigates Crunchbase and Angellist, extracts relevant company information (industry, size, location, etc.), and stores it in a structured format within the Supabase database.

2. Contact Discovery [Hunter 2]

- **Function:** Scraping LinkedIn and applying MX logic to identify and validate contact information for decision-makers within the identified ICP companies.
- **Technology:** Puppeteer, Playwright, MX record validation.
- **LLM Used:** None.
- **Process:** This agent uses LinkedIn to find potential contacts within the target companies. It then employs MX record validation to ensure the accuracy and deliverability of the discovered email addresses.

3. Personalized Mail Writer [Converter 1]

- **Function:** Generating customized cold outreach emails based on the context of the contact and their company.
- **Technology:** Mistral 7B, LangChain.
- **LLM Used:** Mistral 7B.
- **Process:** Leveraging the data gathered by Hunter 1 and Hunter 2, this agent uses Mistral 7B to craft personalized email messages that resonate with the recipient's role and company. The emails are designed to be engaging and relevant, increasing the likelihood of a positive response.

4. CRM Follow-up & Tracker [Converter 2]

- **Function:** Detecting unresponsive leads and automatically generating follow-up emails based on the context of previous communications.
- **Technology:** Mistral, IMAP/SMTP.
- **LLM Used:** Mistral.
- **Process:** This agent monitors the CRM for leads that have not responded to initial outreach. Using the history of previous email exchanges, it generates personalized follow-up messages designed to re-engage the lead and encourage a response.

Support Agents

These agents automated various aspects of customer support, from document verification to ticket resolution, improving response times and reducing the workload on support staff.

5. Document Verifier

- **Function:** Validating uploaded documents against user profiles using regex and PyMuPDF logic.
- **Technology:** PyMuPDF, Regex.
- **LLM Used:** None.
- **Process:** This agent automatically verifies the authenticity and validity of documents uploaded by users. It uses regex to check for specific patterns and PyMuPDF to extract and analyze the content of PDF documents.

6. Ticket Responder

- **Function:** Transcribing audio from support tickets and using LLaMA3 to generate appropriate responses.
- **Technology:** Whisper, LLaMA3 8B.
- **LLM Used:** LLaMA3 8B.
- **Process:** This agent uses Whisper to transcribe audio messages from support tickets into text. It then uses LLaMA3 8B to analyze the text and generate a relevant and helpful response, which is sent back to the customer.

7. Onboarding Bot

- **Function:** Responding to KYC-related queries over email/voice with instructional guidance.
- **Technology:** Mistral, IMAP/SMTP.
- **LLM Used:** Mistral.
- **Process:** This agent handles common questions related to the Know Your Customer (KYC) process. It uses Mistral to understand the user's query and provide clear and concise instructions, guiding them through the onboarding process.

8. Dormancy Risk Detector

- **Function:** Analyzing behavioral vectors to classify user engagement risk and alerting operations for re-engagement.
- **Technology:** Mistral, Supabase.
- **LLM Used:** Mistral.
- **Process:** This agent analyzes user behavior patterns to identify users who are at risk of becoming inactive. It uses Mistral to classify the level of risk and alerts the operations team to take proactive steps to re-engage these users.

BizOps & FinOps Agents

These agents focused on automating financial and operational tasks, improving efficiency and accuracy in these critical areas.

9. Gift Card Rate Optimizer

- **Function:** Comparing supplier APIs to select optimal voucher rates and using fallback logic when needed.
- **Technology:** Mistral, API integrations.
- **LLM Used:** Mistral.
- **Process:** This agent automatically compares gift card rates from different suppliers to identify the most cost-effective option. It uses Mistral to analyze the data and make informed decisions, ensuring that the company gets the best possible rates.

10. Invoice & MPR Parser

- **Function:** Parsing uploaded PDFs to extract and store structured financial data.
- **Technology:** PyMuPDF.
- **LLM Used:** None.
- **Process:** This agent automatically extracts data from invoices and Monthly Performance Reports (MPRs) in PDF format. It uses PyMuPDF to parse the documents and store the extracted data in a structured format for further analysis.

11. Discrepancy Checker

- **Function:** Comparing invoices with PO data to detect mismatches and alert the finance team.
- **Technology:** Supabase.
- **LLM Used:** None.
- **Process:** This agent compares invoice data with Purchase Order (PO) data to identify any discrepancies. If a mismatch is detected, it alerts the finance team to investigate and resolve the issue.

12. Vendor Risk Classifier

- **Function:** Scraping web presence and classifying vendor risk via summarization logic.
- **Technology:** Mistral, Puppeteer, Playwright.
- **LLM Used:** Mistral.
- **Process:** This agent gathers information about vendors from their online presence and uses Mistral to assess their risk level. This helps the company make informed decisions about which vendors to work with.

13. Finance Dashboard Bot

- **Function:** Generating visual reports and commentary on financial trends every Monday.
- **Technology:** Mistral, Plotly, Supabase.
- **LLM Used:** Mistral.
- **Process:** This agent automatically generates financial reports and dashboards on a weekly basis. It uses Mistral to analyze the data and provide commentary on key trends, helping the finance team stay informed and make data-driven decisions.

Automation Agent Functions



QA Automation Agents

These agents automated various aspects of the quality assurance process, improving the speed and efficiency of testing.

14. Test Case Generator

- **Function:** Generating structured test cases from new feature specs using Phi-3 Mini.
- **Technology:** Phi-3 Mini.
- **LLM Used:** Phi-3 Mini.
- **Process:** This agent automatically generates test cases from new feature specifications, helping the QA team to quickly and efficiently test new functionality.

15. Bug Reproduction Agent

- **Function:** Reconstructing steps from backend logs to help QA teams replicate bugs.
- **Technology:** Phi-3 Mini.
- **LLM Used:** Phi-3 Mini.
- **Process:** This agent analyzes backend logs to reconstruct the steps that led to a bug, helping the QA team to reproduce the issue and verify the fix.

16. UX Feedback Analyzer

- **Function:** Analyzing support messages to identify and group UX pain points.
- **Technology:** Mistral.
- **LLM Used:** Mistral.
- **Process:** This agent analyzes support messages to identify common UX pain points, providing valuable feedback to the design and development teams.

17. Release Readiness Checker

- **Function:** Running a logic-based checklist on new builds to verify pre-launch
- **Technology:** Supabase.
- **LLM Used:** None

Marketing Intelligence Agents

18. Reddit/Forum Listener

- **Function:** Monitoring forums like Reddit for brand mentions and keywords.
- **Technology:** Puppeteer, Slack Webhooks.
- **LLM Used:** None.
- **Process:** This agent scrapes Reddit and niche forums on a schedule, filters for relevant keywords, and sends alerts to the marketing team via Slack.

19. Blog Writer & SEO Bot

- **Function:** Generating SEO-optimized blog posts from topic and keyword prompts.
- **Technology:** LLaMA3 8B.
- **LLM Used:** LLaMA3 8B.
- **Process:** This agent receives a topic and keyword set, formats a prompt for SEO best practices, and generates a long-form blog post ready for review.

20. Auto Scheduler

- **Function:** Scheduling content to post during peak engagement times.
- **Technology:** Buffer API, Supabase.
- **LLM Used:** None.
- **Process:** Based on historical engagement data, this agent selects the best time to publish content and schedules it across platforms.

21. Campaign Insights Analyst

- **Function:** Summarizing campaign performance data into actionable insights.
- **Technology:** Mistral, GA4, Plausible.
- **LLM Used:** Mistral.
- **Process:** This agent pulls web analytics weekly, summarizes trends and anomalies, and delivers reports to stakeholders via Slack or email.

Overview of QA and Marketing Agents

System Orchestration Agent

22. Meta Agent [System Controller]

- **Function:** Monitoring and controlling execution of agents based on infrastructure load.
- **Technology:** Prometheus, Redis, psutil.
- **LLM Used:** None.
- **Process:** This agent checks system metrics every 30 seconds and dynamically throttles or pauses low-priority agents when load thresholds are exceeded, ensuring system stability.

Balancing Agent Execution for System Stability

Tech Stack Used

- **Automation & Orchestration:** n8n (no-code), Redis Pub/Sub
- **Scraping:** Puppeteer, Playwright
- **Databases:** Supabase (PostgreSQL), Chroma (vector search)
- **LLMs:** Mistral 7B, LLaMA3 8B, Phi-3 Mini
- **Transcription:** Whisper
- **Document Parsing:** PyMuPDF
- **Prompt Engineering:** LangChain
- **Visualizations:** Plotly
- **Monitoring:** Prometheus, Slack Alerts
- **Form Tracking:** Custom Reddit Listeners
- **Email Handling:** IMAP/SMTP

Client Impact and Results

- 70% reduction in manual effort across support, sales, and finance teams
- 3.5x faster sales outreach and lead qualification
- 40% of customer tickets auto-resolved with accurate AI replies
- Financial reporting time reduced from days to under an hour
- Near real-time response to brand mentions across forums
- Achieved 100% release compliance through automated readiness checks
- Dynamic system load handling enabled uninterrupted agent execution

Client Impact and Results

