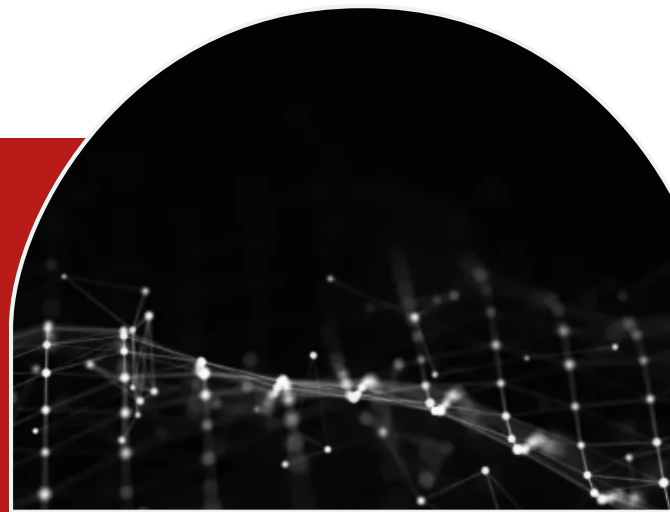# AUTOMATING RFP RESPONSE PROCESSES WITH MULTI-AGENT SYSTEMS

Revolutionizing Civil Engineering Consultancy with Intelligent Automation

INTRODUCTION

In the competitive world of civil engineering consulting, RFP responses are resource-intensive. RHC Engineering, a leader in water and irrigation design, faced slow, manual processes that limited efficiency and increased errors. Partnering with DreamAI, they implemented an AI-driven system that automates personnel matching, risk analysis, and document synthesis while keeping experts involved. The solution reduced response time by 150%, improved proposal quality, and allowed RHC to pursue 150-200% more projects annually.

CUSTOMER STORY

Industry: Civil Engineering Consulting (Water & Irrigation)
Pain Points:
- Time Constraints: Teams spent 8-10 weeks manually extracting RFP requirements, shortlisting resumes, and aligning past projects.
- Resource Bottlenecks: Limited qualified engineers led to frequent mismatches in personnel selection.
- Inconsistent Risk Analysis: Subjective scoring in the Go/No-Go phase caused missed opportunities or overcommitment.
- Document Fragmentation: Copy-pasting from 150+ documents led to errors and version issues.

Goals:
- Automate RFP requirement extraction and resume/project matching.
- Improve risk analysis with data-driven insights.
- Speed up response drafting while ensuring accuracy.
- Scale operations without increasing headcount.

TECHNOLOGIES

- AI Models: GPT-4, Claude 3, Gemini (ensemble for consensus-based outputs).
- Vector Database: LanceDB for fast RAG retrieval.
- Agents: Pydantic-AI workflows with memory retention.
- Frontend: React web app for real-time collaboration.

OUR SOLUTION

YearlingAI built an AI-driven data retrieval system, seamlessly integrated as a microservice on Google Cloud Platform (GCP). Users can access information via voice or text, eliminating manual database queries. AI-powered search, using NLP, Knowledge Graphs, and CypherQL, ensures accurate results. Automated email responses extract answers from past inquiries, reducing workload. With a microservice architecture, the solution integrates effortlessly into existing systems.

How It Works
The system converts voice or text queries into structured searches using speech-to-text and NLP. AI generates Cypher queries via Knowledge Graphs and Neo4j for precise data retrieval. Intent classification and entity recognition refine results, delivering real-time insights via text or speech. A fine-tuned BERT model automates email responses, streamlining repetitive inquiries.

CONCLUSION

By integrating AI agents into their RFP workflows, RHC Engineering transformed from a labor-intensive consultancy to a data-driven industry leader. The system's ability to synthesize complex requirements, align resources, and mitigate risks has positioned RHC as a benchmark for innovation in civil engineering.

Future Roadmap:
- Expand AI agents to automate permit applications and environmental impact assessments.
- Integrate predictive analytics for bid win probability.

ABOUT YEARLING AI

We build AI that works. At YearlingAI, we bring deep technical expertise to solve complex problems with machine learning, natural language processing, and generative AI. From intelligent automation to custom LLM agents, we design, build, and deploy solutions that drive results. As a Google Cloud partner, we specialize in cloud-native development—but also support AWS, Azure, and hybrid environments. Whether you're a growing startup or a global team, we deliver practical AI solutions that scale with your needs.