AI-Powered RFP Management System

Single-user web app to automate procurement using NLP & AI
Built for FMCG raw material procurement (Sugar, Honey, Palm Oil, etc.)

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1 Project Setup (As required in PDF)

Prerequisites

Requirement	Version
Node.js	18+
MongoDB	Local or Docker
OpenAI API Key	For NLP extraction + proposal scoring
Email Provider (Dummy for demo)	Console logs / can be replaced with SMTP

✔ Installation

Backend

```
cd backend
npm install
cp .env.example .env  # add Mongo URI & OpenAI key
npm run seed          # add dummy vendors
npm run dev
```

Frontend

```
cd frontend
npm install
npm run dev
```

Backend → http://localhost:5000
Frontend → http://localhost:5173

✔ Email Configuration

Currently using **dummy email sender** to console.log (can be replaced with SMTP/SendGrid).

✔ Local Run Summary

Feature

NLP RFP Creation

Form-based RFP Creation

Vendor Management +
Sending

Vendor Response Submission

AI-based Proposal Comparison

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2 Tech Stack Overview

Layer	Technology
Frontend	React + Tailwind + Vite
Backend	Node.js + Express
Database	MongoDB
AI Models	OpenAI GPT-4o-mini for NLP + Scoring
Email	Console logs (stub for SMTP integration)

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3 API Documentation (Core Endpoints)

Method	Endpoint	Purpose

POST	`/api/rfp/nlp-create`	Create RFP from natural language
POST	`/api/rfp/create`	Form-based RFP creation
GET	`/api/rfp`	List all RFPs
POST	`/api/rfp/:id/send`	Send RFP to vendors
POST	`/api/vendor/submit`	Vendor response submission
POST	`/api/vendor/evaluate`	AI-powered vendor ranking

AI extracts:

- Quantities

- Grades / quality

- Delivery time

- Pricing / payment terms

📌 **LLM scores vendors using trade-off logic** (quality > lead > price)

4️⃣ Key Design Decisions & Assumptions

✔ Decisions

Area	Our Approach
RFP Capture	Two modes → NLP + Form
Vendor Data	MongoDB vendor master
Email	Simulated outbox (logs to console)
Vendor Parsing	Manual entry + LLM structured extraction

| Evaluation | LLM-driven scoring with justification |
| Workflow | Linear procurement flow (single user) |

✔ Assumptions

- Procurement team operates **single-user mode** (multi-tenant not required)

- Vendor responses may arrive as text; attachments parsing can be extended

- NLP auto-fills missing quantities with defaults for demo purposes

- Simulated inbound email (PDF parsing optional scope)

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5 AI Tools Usage (as required)

Tool	Used For
ChatGPT (GPT-4o-mini)	NLP RFP extraction, vendor scoring logic, prompt engineering
AI-assisted development (this conversation)	Codegen, architecture assistance
GPT scoring	Procurement-grade weighted recommendations

Prompt Highlights

- JSON-strict output enforcement

- Procurement weighting: Quality (40%), Quantity (25%), Lead time (20%), Price (10%), Payment terms (5%)

Learnings

- RFP parsing requires **robust JSON fallback** extraction

- PDF extraction is a **non-trivial NLP challenge** — modular design helps extend later

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6️⃣ Demo Video 🎥

📌 Link :
- ✔ NLP creation
- ✔ Vendor send-out
- ✔ Vendor submit
- ✔ AI scoring & ranking
- ✔ Code walkthrough

🌟 Future Enhancements (Recommended)

To go above expectations:

Enhancement	Value
Real Email Integration (SMTP / IMAP)	Meets advanced requirement of auto email ingest
PDF Table Extraction (OCR + Layout ML)	Fully automated vendor parsing
Vendor Performance History	Smart learning for better negotiations
Confidence Score for AI Outputs	Better trust and auditing
Negotiation AI	Target price suggestion for vendors
Interactive Comparison Dashboard	UX excellence