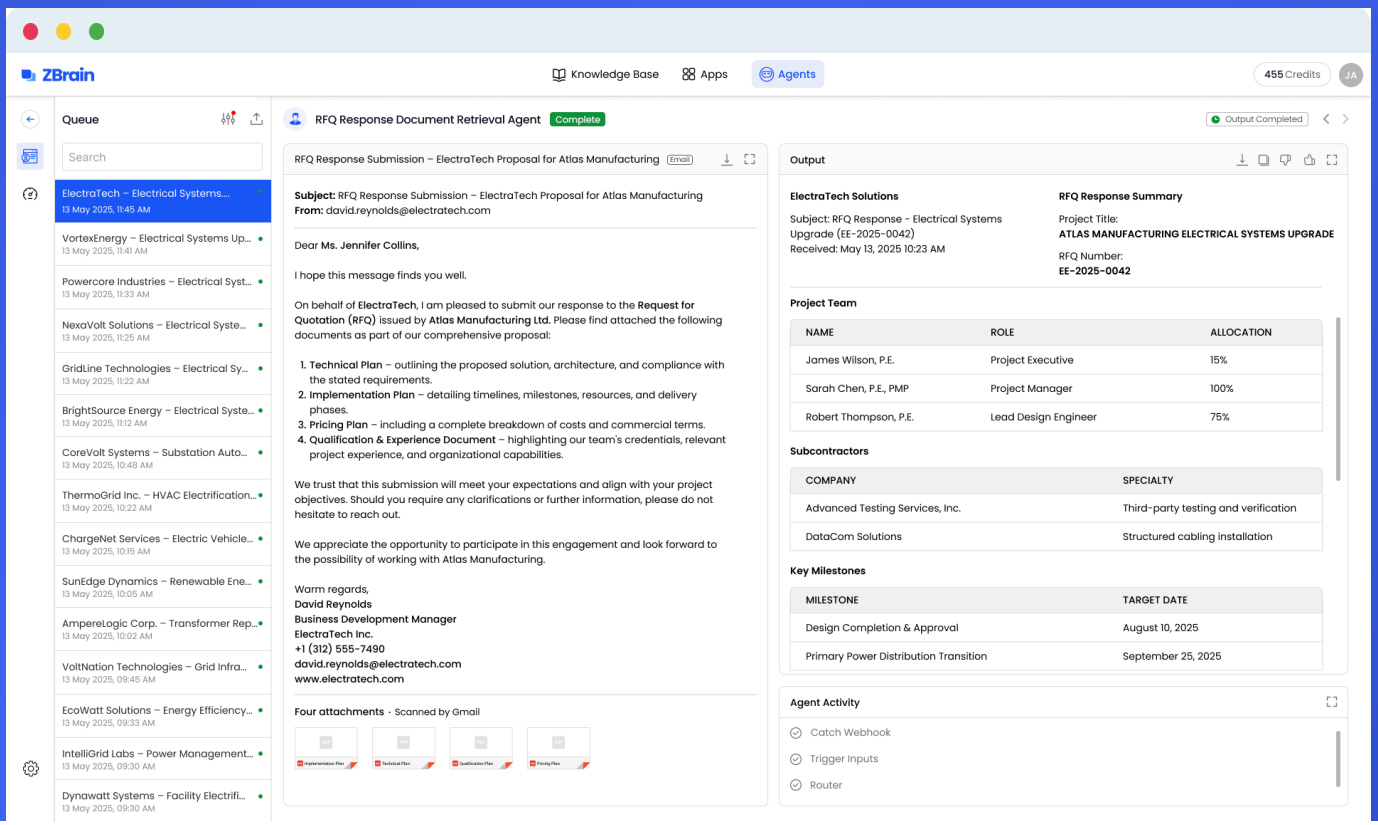


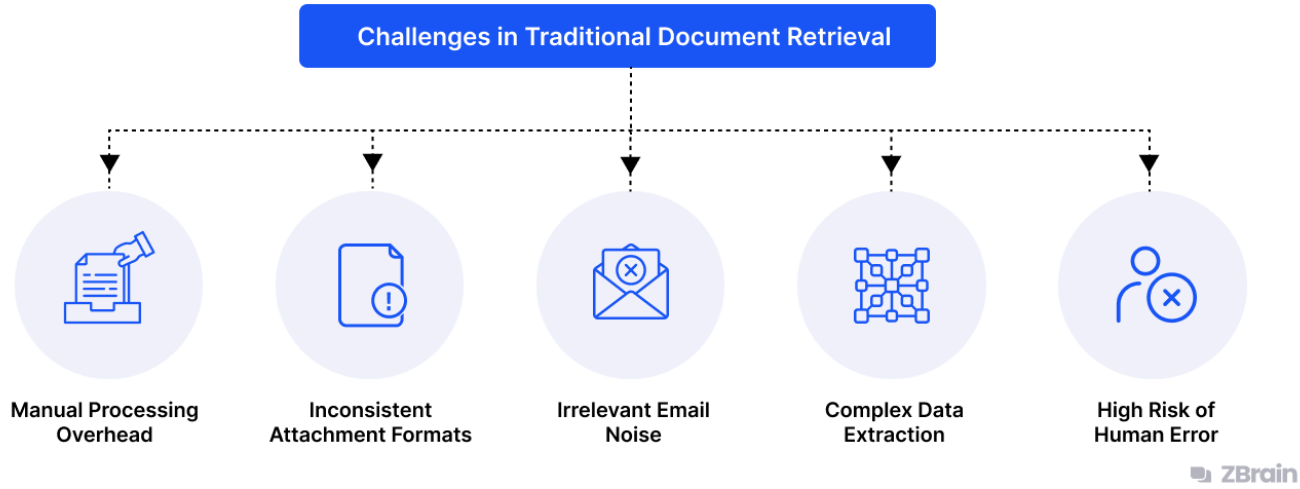
RFQ Response Document Retrieval Agent Solution Document

Problem Statement

Managing incoming RFQ (Request for Quotation) submissions from vendors is a crucial aspect of the procurement process. Typically received via email with multiple attachments, including technical specifications and compliance documents, these submissions require thorough parsing, validation, and preparation for evaluation. Relying on manual handling introduces significant inefficiencies, increases the likelihood of errors, and adds to operational risks, particularly when dealing with a high volume of RFQs.

- **Manual Processing Overhead:** Procurement teams must manually review each email, download attachments, and extract relevant information, which slows down evaluation cycles.
- **Attachment Variability:** Vendors submit RFQ documents in various formats, including PDFs, Word files, and scanned images, making standardization difficult.
- **Relevance Filtering:** Not all emails contain valid RFQ responses, requiring manual effort to identify and segregate relevant messages from noise.
- **Lack of Document Validation:** Emails may contain missing or invalid attachments, making verification of completeness a bottleneck.
- **Lack of Integration:** Manual document processing requires additional steps to forward files to evaluation systems, leading to unnecessary delays.
- **Data Extraction Challenges:** Extracting accurate information from scanned documents or embedded images requires additional processing tools.
- **Error-Prone Workflows:** Manual classification and extraction lead to data loss, duplication, or inconsistencies.

To address these challenges, an automated solution is required to ingest emails, validate and extract attachment content, and reliably prepare RFQs for structured downstream processing.



Solution Statement

ZBrain RFQ response document retrieval agent streamlines the intake and preparation of vendor-submitted RFQ documents by automating the processing of RFQ emails and attachments. Upon receiving an email via a connected webhook or designated Gmail inbox, the agent intelligently filters for RFQ relevance using a Large Language Model (LLM), ensuring only pertinent emails are processed. It then validates and iterates through each attachment, supporting PDFs, Word documents, and text files, extracting content directly or using LLM where necessary. The extracted content is standardized into Markdown format and enriched with key metadata. Each processed document is then routed sequentially to the screening agent for evaluation, while a summary of submission details is displayed on the dashboard for traceability. By eliminating manual effort and enabling structured, consistent document handoff, the RFQ document retrieval agent reduces processing time, ensures data completeness, and enhances the scalability of procurement operations.

Agent Setup

The RFQ Response Document Retrieval Agent comprises a structured set of components designed to automate the classification, processing, and routing of RFQ documents received via email. Below are the key components that enable its functionality:

1. Gmail Integration

- The agent seamlessly integrates with Gmail and is automatically triggered whenever a new email arrives in the connected inbox. This initiates the retrieval and processing pipeline, ensuring timely and efficient handling of incoming emails.

Agent Setup

2. Large Language Model (LLM)

- The agent leverages multiple large language models to perform intelligent analysis, formatting, and data extraction at different stages of the workflow:
  - Determines whether the incoming email is a relevant RFQ response.
  - Extracts text from images generated from scanned PDFs.
  - Identifies and extracts key RFQ fields, such as RFQ number, project title, and vendor details, from attachment text.
  - Converts raw extracted text into clean, structured Markdown format.
  - Consolidates metadata from multiple attachments into a single summary for dashboard display and downstream use.

3. PDF to Images Conversion

- For scanned PDFs, the agent converts each page into an image. This enables subsequent text extraction through image processing.

4. Integration with Screening Agent

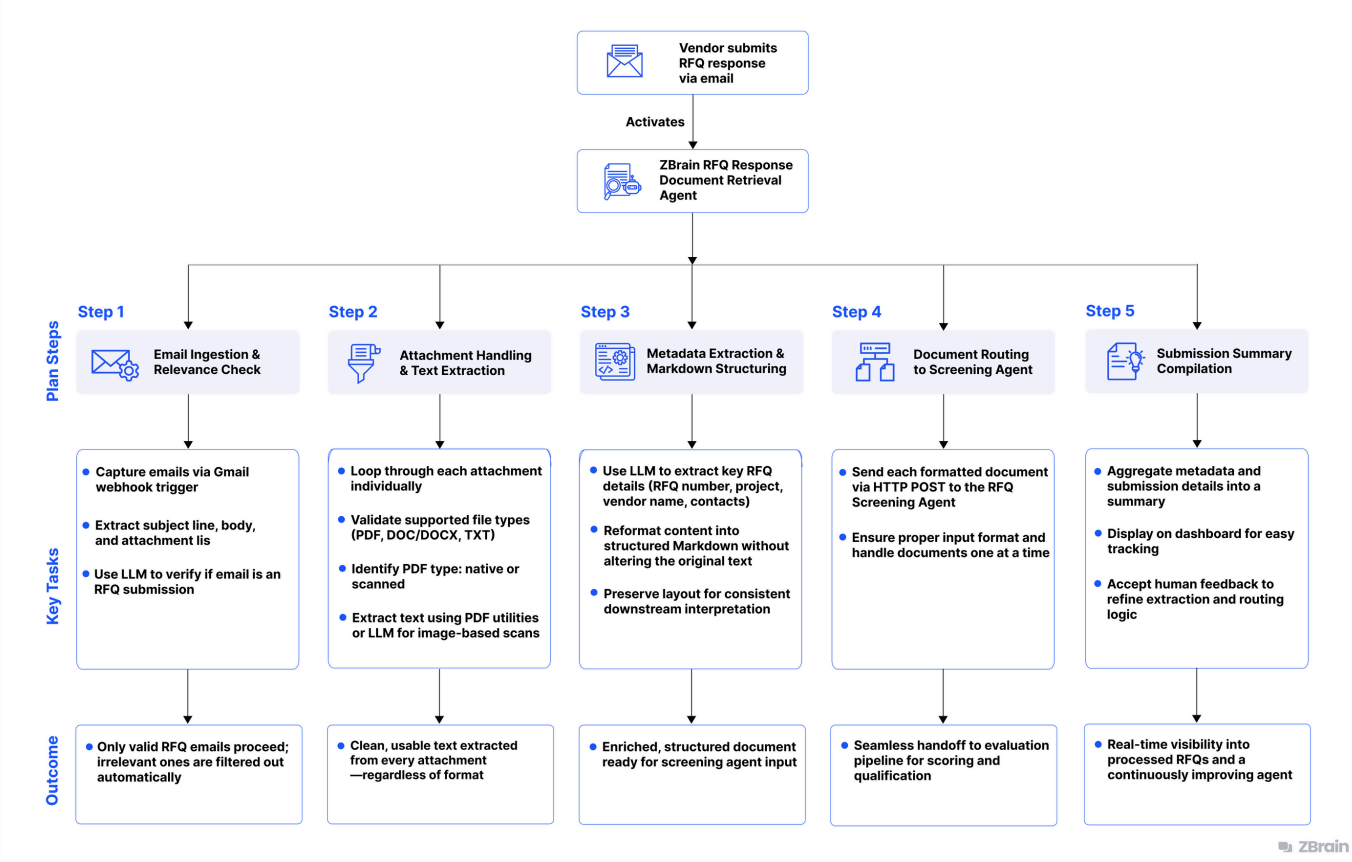
- The agent integrates seamlessly with the downstream screening agent in the RFQ lifecycle. It sends each formatted attachment individually to the RFQ response screening agent for document-level evaluation. This ensures consistent, document-level inputs for screening, enabling accurate scoring and downstream analysis.

5. Human Feedback Loop

- Users can review extracted content and provide feedback on accuracy and completeness. This input helps refine the agent's extraction and formatting logic, ensuring improved performance over time.

How The Agent Works

ZBrain RFQ response document retrieval agent follows a structured, step-by-step process to automatically identify, extract, and prepare vendor-submitted RFQ response documents for downstream evaluation. Below is a detailed breakdown of how the agent streamlines the intake and pre-screening stages of the RFQ process.



How The Agent Works

Step 1: Email Ingestion and Relevance Checking

The agent begins by capturing incoming emails and validating whether the message is relevant to an RFQ submission.

Key Tasks:

- **Email Trigger:** A Gmail webhook activates the agent upon receipt of an incoming email.
- **Email Field Extraction:** A code component extracts essential details such as the subject, body text, and list of attachments.
- **Relevance Check:** An LLM analyzes the email content to determine whether the email pertains to an RFQ. Only relevant emails are passed forward.

Outcome:

Automated RFQ Email Filtering: Non-relevant emails are filtered out, ensuring the workflow only processes valid RFQ submissions, reducing manual review efforts.

Step 2: Attachment Handling and Text Extraction

The agent examines each attachment in the email and extracts the necessary textual content for further processing.

Key Tasks:

- **Attachment Processing:** The agent processes each attached file individually in a loop.
- **File Type Validation:** The agent checks if the file is a supported format, PDF, Word (.doc/.docx), or Text (.txt). Unsupported types are flagged with an appropriate message.
- **PDF Classification:** If the attachment is a PDF, the agent determines whether it is a native (digitally readable) or scanned (image-based) PDF.
- **Content Extraction:**
  - **Native PDFs:** Text is extracted directly using a PDF-to-text utility.
  - **Scanned PDFs:** Converted into images and processed using a multimodal LLM to extract text.
  - **Word/Text Files:** Text is directly extracted.

Outcome:

Accurate Multi-format Text Extraction: Each attachment is accurately interpreted and converted into usable plain text, regardless of input format.

How The Agent Works

Step 3: Key Metadata Extraction and Formatting

The extracted text is analyzed to retrieve key details and then structured into a standardized format for downstream processing.

Key Tasks:

- **RFQ Detail Extraction:** An LLM identifies and extracts key RFQ details from the text, such as:
  - RFQ Number
  - Project Title
  - Vendor Name
  - Contact Details
- **Markdown Structuring:** A dedicated LLM reformats the extracted text into well-structured Markdown, adding only formatting syntax without rewriting, summarizing, or omitting any content. This approach preserves the original structure and ensures clarity for subsequent processing stages.

Outcome:

Metadata Enriched Structured Document: The extracted document is enriched with structured metadata and formatted in a consistent layout for efficient downstream consumption.

Step 4: Document Routing to Screening Agent

Once formatted, each document is routed to the downstream agent responsible for evaluation.

Key Tasks:

- **HTTP POST Call:** The agent sends each attachment individually via a POST request to the ZBrain RFQ response screening agent
- **Input Transfer:** The formatted content serves as the input for screening, allowing evaluation workflows to proceed without delay.
- **Sequential Handling:** Documents are processed one at a time to ensure precise alignment with the downstream agent's input requirements.

Outcome:

Efficient Evaluation Transfer: Processed documents are seamlessly transferred to the evaluation workflow, allowing the screening agent to begin scoring and validation.

How The Agent Works

Step 5: Submission Summary Compilation

Once all documents have been processed and routed, the agent compiles a consolidated summary for dashboard visibility.

Key Tasks:

- **Summary Generation:** A final LLM aggregates key metadata, document names and submission context from the processed attachments.
- **Dashboard Output:** The summary is displayed in the agent's dashboard for review.
- **Human Feedback Integration:** Users review each submission summary, and their feedback iteratively fine-tunes the agent, continuously increasing accuracy.

Outcome:

Consolidated Submission Summary: A comprehensive submission summary is created, offering clarity on the number of attachments processed and the vendor-specific metadata, supporting visibility and downstream decision-making.

Key Benefits

Time Efficiency

Automates the retrieval and processing of RFQ documents, reducing manual effort and accelerating response cycles.

Accuracy

Extracts and preserves complete document content while accurately identifying key RFQ metadata.

Scalability

Handles multiple attachments and high submission volumes, supporting enterprise-scale operations.

Workflow Automation

Automatically routes processed documents to downstream agents, enabling end-to-end workflow automation.

Error Reduction

Minimizes manual errors through automated classification, extraction, and validation steps.

Transparency

Provides real-time visibility into processed submissions through dashboard summaries.

Conclusion

ZBrain RFQ response document retrieval agent transforms the intake and preparation of vendor-submitted RFQ responses by automating document extraction, classification, and formatting. It eliminates manual overhead, ensures accuracy across diverse file types, and seamlessly integrates with downstream screening agents to enable scalable and consistent evaluation. By leveraging LLMs for relevance detection, content interpretation, and metadata extraction, the agent delivers structured, high-fidelity outputs that enhance traceability and reduce risk. Continuously improved through user feedback, the agent adapts to evolving submission formats and procurement requirements. This intelligent, automated approach accelerates RFQ processing and empowers procurement teams to make faster, data-driven decisions, making the RFQ document retrieval agent an essential asset for efficient, modern procurement operations.