MOATIVE

Applied AI Services & Venture Labs

AI for Freight Forwarding

Phase 1 - Matching suitable vendors to RFQs using AI

Statement of Work

Proposed for

NVISION

27.01.2025

Executive Summary

Introduction

NVISION, a freight forwarding company based in Hong Kong, provides specialized shipping, freight forwarding and logistics services to clients. Serving as an intermediary, NVISION enables clients to ship goods across the world via multiple modes (air, sea), shipment carriers and at the best rates.

NVISION has combined their extensive know-how of the industry with cutting-edge technology to launch a digital platform. The platform empowers customers with tools, data and insights that makes freight forwarding and shipping easy. NVISION would like to further enhance their platform by adding AI/ML capabilities and features that improve productivity and reduce timelines, while making the customer experience friction-free.

As part of this initiative, NVISION has engaged with Moative to explore an AI-led solution to streamline their Quote Preparation process.

Quote Preparation

Current State

NVISION's clients approach them with request for quotation (RFQ) to address their shipping needs. The RFQ contains details such as goods to be shipped, origin and destination locations, date of expected shipping/ delivery, and more. Business experts at NVISION use their experience and industry knowledge to pick the right vendor and quote that matches the RFQ requirements.

The current approach is expertise driven and person-dependent. This causes inefficiencies such as excess manual effort due to lack of standardization, potential for error due to human-driven workflows, and long turn-around-time (TAT) due to reliance on key individuals.

Requirements and Scope

Moative has studied their current process and identified several areas in the process that can be streamlined. The end-to-end process can be transformed using automation, data engineering and AI/ML, resulting in big savings in terms of effort and time. It will also reduce TAT for customers, enhance customer experience and improve customer satisfaction.

Based on our recent conversations with the NVISION team, we understand that while the long-term objective is full AI integration of the quote preparation process, the team would like to focus on a solution that delivers immediate value.

The scope of the first phase is to deliver a point solution that identifies the most suitable vendor quotes for customer RFQs. We believe prioritizing this capability will effectively address current needs while aligning with future strategic goals.

The NVISION team further suggested that we could restrict the first phase to focus on RFQs and quotes pertaining to Ocean FCL (Full container loads) going through Europe, North America & Oceania routes.

Moative's Proposed Solution

Given the scope of summarised above, Moative proposes to deliver a solution that consists of the following:

1. Email Collection Mechanism: All customer RFQs and Vendor quotes received by NVISION will be forwarded to a common email address. (scope: for the 1st phase, we will restrict the solution to RFQs and Vendor quotes received by email. If the RFQ or Vendor quote cannot be shared via email, it is out of scope for now.)
2. A RFQ Repository: All RFQs received in the common email address will be processed and stored in a standardized format into an RFQ repository.
3. A Vendor Quote Repository: All the Vendor quotes received in the common email address will be processed and stored in a standardized format into the vendor quote repository (VQR). This will make quotes searchable and enable automated matching with customer RFQs.
4. RFQ-VQR Matching Algorithm: Moative will develop an AI/ML-driven algorithm that, when presented with a customer RFQ, will search the VQR and identify the top 3 quotes by analyzing relevant fields to ensure the most suitable matches align with the specific requirements of the RFQ

When customers send RFQs, they are recorded in a RFQ repository. Vendor Quotes are stored in a standardized quote repository. Once a new RFQ comes in, the Matching Algorithm will

1. Pick the top 3 vendor quotes from the VQR by analyzing relevant fields to ensure the best alignment with the specific requirements of the RFQ.
2. If it is not able to find a matching quote, the algorithm will send a message to the business stakeholder.

Implementation Plan

While Moative has a conceptual solution design, we need some specific information to arrive at a fully detailed technical solution. These include:

- Determination of the key attributes required in the RFQs and the Vendor Quotations
- The business logic used to match the vendor quotation to the RFQ and the exceptions that are common, that may make matching a complex activity
- The interfaces/ integrations through which RFQ and Vendor Quote information is passed to the associated repositories

Hence Moative proposes to develop the solution using a 2-stage approach.

Stage 1: Business Logic and Solution Design

During the first stage of the project, Moative will

- determine standard data structures for RFQs and vendor quotes,
- develop the business logic and algorithm for matching quotes from vendors to the customer RFQs. As part of this, we will also define the cases where this algorithm can be implemented, and the more complex cases that need business expertise.
- specify the full technical solution, encompassing architecture, algorithms and data flows. This also includes hand-overs/ integrations with current business processes.

At the end of Stage 1, Moative will be able to define

- the RFQs for which the quote matching can be automated
- the expected accuracy and the acceptance criteria for the matching algorithm
- the process by which information can be transferred from RFQs and vendor quotations to the appropriate repositories
- the technical specifications of the solution

We expect this Stage 1 to be spread over two weeks.

We will need the support of a business SME from NVISION to help understand the current data and logic and to validate the matching algorithms. This may need a few meetings and clarifications via emails and documents.

Stage 2: Solution Development

The second stage of the project involves actual development of the solution, followed by customer validation and refinement, before handover.

We expect Stage 2 to be spread over 6 weeks, including business user validation and deployment.

Timelines and Commercials

We expect the entire solution development to be spread over 8 weeks,

Moative will deploy a 2-member team consisting of a Project Manager and an AI developer to implement this solution.

The estimated time spent by each member is provided in the sections below. The actual time spent by each member of the team will vary. The billing will be based on actual time spent by each consultant.

Considering the rough estimate of 8 weeks, we expect the development cost to be approximately US $20,000.

If the timelines vary (based on mutual agreement), the cost might increase or decrease accordingly. The details are shared in the indicative cost estimate section

Moative shall bill NVISION in two-week cycles in advance. The final cycle close to handover will be billed at the end of delivery of that cycle.

Moative's Solution

Quote Preparation Process: Current State

NVISION's quote preparation process is primarily manual, relying on the experience, expertise and diligence of a few key individuals. The current process is detailed below.

> **Step 1:** Client submits a Request for Quotation (RFQ) with shipment requirements such as the nature of the goods, origin and destination, and shipment date.
>
> **Step 2(a):** The NVISION team uses their industry knowledge and their vendor quote repository to select a set of vendor quotes that match the customer requirements.
>
> **Step 2(b):** From this set of vendor quotes, NVISION's quote expert selects the best matching vendor quote.

Step 3: This vendor quote is modified by the sales team to add additional margin for NVISION and a final quote is formulated.

Step 4: This final quote is delivered to the client.

This current approach is person-dependent and expertise driven. This results in a number of inefficiencies such as excess manual effort due to lack of standardization, potential for error due to human-driven workflows, and extended turn-around-time (TAT) due to reliance on key individuals.

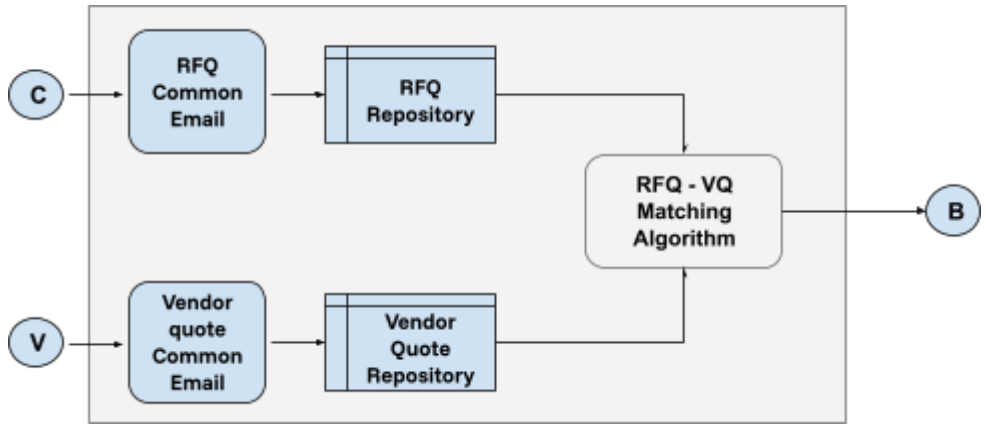
The key to this process is the business expert who manages the vendor quote repository (VQR). Such experts are an asset to the business, and their knowledge should be leveraged in a way that maximises their impact. If an expert is involved in every quote formulation for every RFQ, this makes their expertise routine and also adds to process bottlenecks. An expert should be involved in the more complex cases, while for simpler RFQs the knowledge and decision making expertise is made part of a business system and not person dependent.

Proposed Solution and Deliverables

Given the scope of the immediate project, Moative proposes to deliver the following:

1. Email address setup: Create new email addresses and set up forwarding rules such that any RFQ email sent by customers and rate cards shared by vendors get automatically sent to their respective address.(scope: for the 1st phase, we will restrict the solution to forwarding customer and vendor emails to their respective common email addresses.)
2. Parsing setup: We will set up a parsing script designed to extract required information from these RFQ's and vendor quotes which will later be sent to their respective data stores.
3. A RFQ Repository: This will be a data store to take in customer RFQs and store them in a standardized format. This will enable RFQs to be easily searched and matched with vendor quotes. Having a RFQ repository with appropriate metadata will also allow for reporting, analytics, business insights.
4. A Vendor Quote Repository: This is a data store to record and store quotations from vendors and shipping partners. Having a standardized vendor quote repository (VQR) will make quotes easily searchable and enable automated matching with customer RFQs.
5. RFQ-VQR Matching Algorithm: Moative will build an automated AI/ML driven algorithm that when given a customer RFQ, will search the VQR and provide the top 3 quotes by analyzing relevant fields to ensure the best alignment with the specific requirements of the RFQ.

The working of this solution can be represented by the following conceptual diagram:



When customers (represented by the 'C') send RFQs, they are forwarded to the common email id. The relevant data is then picked out from the email and recorded in the RFQ repository. Similarly, vendor quotes get forwarded to their common email. The relevant data gets extracted and stored in a standardized quote repository. Once a new RFQ comes in, the Matching Algorithm will

1. Pick the top 3 quotes from the VQR that best match the requirements in the RFQ.
2. If it is not able to find a matching quote, the algorithm will send a message to the business stakeholder (represented by 'B')

Acceptance Criteria

The solution that is being developed at this stage, is a point solution to enhance productivity in just one step - RFQ to vendor quote matching - and one sub category -Ocean FCL quotes for Europe, North America & Oceania routes- in a multi-step process (covering various modes (air, sea) moving goods around the world) of RFQ response generation.

Since the proposed solution does not streamline the end-to-end process, the Matching Algorithm will not be part of a fully automated process. Instead it will be an input to human experts that will improve the productivity of the experts.The matching algorithm will be delivered to a business expert, who will review and accept/ reject the matching quotes. This process can be detailed as follows:

1. The matching algorithm will search the VQR and provide the top 3 quotes that closely match the RFQ requirements.
2. Since the matching logic is not precise, the match between the RFQ and the vendor quote will not be exact. The algorithm will highlight the areas of difference between the RFQ and the vendor quote
3. The output of the matching algorithm will be delivered to a business expert for review and acceptance.

4. The human expert will review and accept the quote if appropriate. If the quote is rejected, the expert will provide feedback on the reasons for rejection. This will help train and improve the matching algorithm for future runs.

As we may only know the details of the RFQs, nuances to consider while matching with vendor quotes, and the exceptions we may need to factor in while building the matching logic, the solution we propose, the time, and the costs are only indicative.

Assumptions, Risks and Limitations

Assumptions

- **Data Availability and Data Formats**
    - RFQ submissions follow consistent patterns in terms of key information provided or requested
    - Vendor quotes contain a standard set of core elements that can be mapped to RFQ requirements
    - Access to subject matter experts will be available for clarifying domain-specific matching criteria
    - Historical RFQ and vendor quote data will be available for analysis during the data standardization phase

- **Process Requirements**
    - The current expert-driven matching criteria can be systematically documented and translated into algorithmic rules
    - The matching logic for Ocean FCL quotes through Europe, North America & Oceania routes can serve as a foundational framework for other modes and routes
    - Business stakeholders can provide clear acceptance criteria for the matching algorithm's accuracy
    - Existing workflows can accommodate the integration of an AI-assisted matching process

- **NVISION Organizational & SME Support**
    - Business experts are available for knowledge transfer and solution validation
    - Change management support will be provided for transitioning to the new workflow

Risks

- **Technical Risks**
    - The complexity of matching logic may exceed initial estimates, requiring additional development time
    - Data quality issues could impact the accuracy of the matching algorithm
    - Integration with existing systems may present unforeseen technical challenges
    - Performance at scale may require additional optimization cycles

- **Process Risks**
    - Edge cases in quote matching may be more numerous than initially anticipated
    - Business rules may prove more difficult to translate into algorithmic logic
    - The solution may require more extensive human oversight than projected
    - User adoption may be slower than expected due to process changes

- **Project Delivery Risks**
    - Knowledge transfer from business experts may take longer than planned
    - Validation cycles could identify significant refinement requirements
    - Integration testing may reveal additional complexity
    - Resource availability could impact project timelines

- **Business Impact Risks**
    - Initial accuracy levels may not meet business expectations
    - Solution may require more extensive training than anticipated
    - Performance improvements may take longer to realize than projected
    - Change management needs may exceed initial estimates

- **Scalability of Deployed solution**
    - The point solution that is deployed based on our understanding of the Ocean freight quotes may not be appropriate for processing quotes from other modes

Limitations

- **Solution Implementation - 1st Phase**
    - Solution restricted to email-based RFQs and vendor quotes only
    - Out of scope: RFQs and quotes received through non-email channels
    - Email collection mechanism: We will restrict the solution to forwarding customer and vendor emails to their respective common email addresses. Other methods can be explored in later stages if needed.

Implementation Plan

Moative intends to implement this solution via a 2-stage plan as detailed below

Stage 1: Business Logic and Solution Design

During the first stage of the project, Moative will perform the following tasks

- **Data Standardization:** Analyze the data and information contained in the RFQs and the vendor quotes. Determine a data structure and data dictionary that can enable data stores for RFQs and VQR (vendor quote repository).
- **Matching Logic:** Understand the business rule, comparison criteria and other logic that are used in comparing the RFQ to the quotes from the vendors. Identify the cases where this logic can be automated, and the more complex RFQs that are out of scope for the first pass implementation.
- **Technical Solution Design:** Create a blueprint for the technical solution, encompassing architecture, algorithms, and data flows. This also includes the hand-overs/ integrations with current business processes.

At the end of Stage 1, Moative will be able to define

- the RFQs for which the quote matching can be automated
- the expected accuracy and the acceptance criteria for the matching algorithm
- the process by which information can be transferred from RFQs and vendor quotations to the appropriate repositories
- the technical specifications of the solution

We will need the support of a business SME from NVISION to help understand the current data and logic and to validate the matching algorithms. This may need a few meetings and clarifications via emails and documents.

Stage 2: Solution Development

The second stage of the project involves actual development of the solution, followed by customer validation and refinement, before handover.

1. **Solution Development:** Develop and implement the technical solution according to the design, translating the plan into a functional system.
2. **Validation and Refinement:** Demo the implemented solution to business stakeholders and gather feedback. Refine the solution based on feedback.

The final, tested solution will be deployed into the production environment and handed over to NVISION.

Implementation Timelines

The overall implementation timelines will be as per the table below:

Stage - Key Tasks	W1	W2	W3	W4	W5	W6	W7	W8	W9
Stage 1: Algorithm and Tech Design									
Data Standardization									
RFQ Matching Algorithm									
Technical solution design (TSD)									
Stage 2: Solution Development									
Solution Development									
User Validation and Refinement									
Handover									

The solution development timelines are estimated based on our current understanding of the scope, data and logic. The actual time spent may differ depending on scope revisions and improved understanding of the workflows and exceptions we discover.

Effort & Commercials

Implementation Team

Moative will deploy a 2-member team, consisting of a Project Manager and an AI developer.

- **The Project Manager** is responsible for coordinating with stakeholders and ensuring successful project delivery. The PM will also act as an analyst understanding business requirements, conducting business analysis, and defining the business logic used in the RFQ - Vendor Quote matching algorithm.
- **The AI Developer** will design, build, and deploy the systems and algorithms that are required to deliver the intelligent RFQ matching solution.

Effort Estimates

The estimated time spent by Moative consultants on developing this project is given below:

Role	Total hours spent (over 8 weeks)	Rate Card (in USD)
Project Manager	75	$70
AI Developer	320	$45
Total	**395**	

The time estimates are indicative. The billing will be based on actual time spent by each consultant.

The effort estimation is based on our understanding of current scope and business logic.. Actual time may differ depending on scope revisions, complexity of workflows and any exceptions we may discover.

Indicative Cost Estimate

Given the timeline and effort estimates above, the estimated cost is about USD20,000.

This project will be billed on a ‘time and material’ basis (as in, for the time spent) and not as a fixed price quote. The cost estimate provides an idea of the expense, to allow for budgeting with room for adjustments based on the actual hours spent. If the timelines vary (based on mutual agreement), the cost would increase or decrease accordingly.

Moative shall bill NVISION in two-week cycles in advance. The final cycle close to handover will be billed at the end of delivery of that cycle.