CLOUDFORGE

SOFTWARE FORGED FOR
THE METAL INDUSTRY

CloudForge Technical Assessment Exercise Brief

CloudForge is the leading all-in-one ERP platform designed specifically for Metal Service Centers (MSCs). Built to optimize every aspect of operations, CloudForge empowers MSCs to streamline workflows, enhance data accuracy, and scale for the future. Our platform covers the full spectrum of business processes, including Purchasing and Vendor Management, Customer and Sales Management, Production Operations, Shipping, Inventory Management, and a robust Accounting solution. With CloudForge, MSCs can boost revenue, increase efficiency, and gain actionable insights, all within a modern, user-friendly platform tailored to meet the unique demands of the industry.

Assessment Overview

This assessment is designed to evaluate your ability to design and build exceptional workflow software that enhances efficiency within a Metal Service Center (MSC). We are looking for an engineer who can develop a polished, intuitive, and functionally rich system that incorporates AI-driven RFQ-to-quote processing. Beyond simply implementing features, your solution should deliver a "wow" factor and be aligned with the real-world operations of MSCs.

Tech Stack

Candidates must build the application using:

- **TypeScript, React**.
- **PostgreSQL or MySQL** for data persistence.

- **AI integration** leveraging OpenAI GPT, DeepSeek, or Anthropic Claude for RFQ parsing or other features..

Scope of the Assessment

The primary focus is on illustrating a complete MSC operational workflow, specifically:

- **Purchasing raw materials from suppliers** and receiving them into inventory.
- **Managing inventory dynamically**, tracking available and on-hand stock.
- **Building a quote manually and via AI:**
    - **When receiving an RFQ (Request for Quote) from a customer in PDF or text format.**
    - **The system should use AI to extract data from the RFQ and generate an initial quote + let the user know if they have inventory to meet the RFQ or if they need to source it.**
- **Generating a structured sales order based on the AI-processed quote.**
- **Allocating specific inventory products to fulfill the sales order.**
- **Shipping the order to the customer and generating invoices.**
- **Ensuring inventory changes statuses, and increments and decrements dynamically as it moves through the cycle.**

Candidates are encouraged to expand the scope by introducing additional features that enhance usability, automation, and intelligence within the system. However, all of these bullet points must be met.

A Stronger Submission Might Include:

- **Workflow automation** on any level. E.g., command based tasks
- **Intelligent pricing suggestions and inventory sales suggestions** based on historical data
- **Production operations** including work order management
- **Seamless PDF parsing and processing** using AI-driven natural language processing.

High-Level User Story

As a user, I want to efficiently manage **RFQs, purchasing, inventory, and sales**, ensuring seamless processing of materials from procurement to customer delivery.

I need the ability to:

1. **Log and manage Suppliers, Clients, Materials, and Inventory** with structured records.
2. **Purchase materials from suppliers** and *receive them into inventory* with accurate tracking.
3. **Generate a Quote** that will be sent to the customer
    a. **Upload and process an RFQ from a customer** (as PDF or text) to extract customer, material, and quantity details to be able to create a draft quote and let the user know of inventory availability.
4. **Sales Order based on the approved quote** with structured line items.
5. **Allocate inventory intelligently** to fulfill the order, dynamically adjusting stock levels.
6. **Ship orders to customers**, updating inventory and tracking logistics.
7. **Generate an invoice** off of the order (not scratch), ensuring financial transparency and accounting integration.

Entities and Their Characteristics

Supplier

- Contains **vendor name, address, and terms**.
- Tracks **material offerings and delivery details**.
- Stores **purchase orders and history**.

Material & Inventory

- Stores **standardized material types** (e.g., steel coils, aluminum sheets) and **dimensions and grade** for each material.
    - Store any other details on the inventory item that may be applicable (e.g., Name of Vendor, Data received)
- Logs **on-hand stock, allocated stock, and purchase history**.
- **Inventory updates dynamically** as materials are purchased, sold, and shipped.

Material Pricing

- For each **Material Type** (e.g., Steel, Aluminum, Stainless Steel), the system should have a **default pricing structure**.
- For example the **standard book price** should be set at **$55 per CWT** for Steel Coils by default but should be **editable at the time of sales order creation**.

RFQ (Request for Quote)

- Uploaded by a customer as a **PDF or text file**.
- Extracts **customer details, requested materials, quantities, and specifications**.

- Converts into a **structured quote draft** using AI.
- Tells the user of inventory availability or if they need to go buy the material
    - If no direct match (common use case), system should recommend similar material (if applicable) based on dimensions and other variables

---

User Flow for Evaluation

1. Add Suppliers & Purchase Materials

- Log supplier details and their product offerings.
- Create and track purchase orders.
- Receive inventory into stock, updating quantities dynamically.

2. Upload RFQ

- User uploads a PDF or text-based RFQ.
- AI extracts key details (Customer, Materials, Quantities, Special Notes).

3. Convert Quote to Sales Order

- AI processes material details and dimensions.
- System applies **default material pricing** (e.g., $55/CWT) but allows user edits.
- Once details are confirmed, a Sales Order is generated.
- System checks **available inventory** and allocates materials accordingly.

4. Ship Order & Generate Invoice

- Shipping logistics are tracked.
- Invoices are generated and stored.
- Inventory is **automatically adjusted**, reflecting the status of the inventory.

Additional Expectations

- **Industry-Specific Data Handling:**
    - Ensure all data structures align with **industry-standard MSC operations**.
    - Incorporate **units of measure**, such as **CWT, lbs, ft, or pieces**.
- **Technical Expectations:**
    - **Hosted on cloud**
    - **Modern UI/UX design** ensuring intuitive user experience.

- **Secure authentication** and role-based access control.
- **RESTful API structure** with well-defined endpoints.
- **AI model integration** leveraging OpenAI or Anthropic.
- **Automated PDF parsing** using a library like `pdf.js` or an NLP model.

Timeline, Deliverables, & Submission

Timeline:

- This exercise is designed to be completed within **5 days**.

Deliverables:

1. A **working web application** implementing the described workflow.
2. **Cloud-hosted deployment with a live URL**.
3. **Clear documentation** covering setup and usage.
4. **Code repository access** (GitHub/Bitbucket) or a ZIP package submission.

Bonus Features:

- **Robust reporting tools** (e.g., sales trends, profitability analysis).
- Command based tasks

General Notes

The expectation is that candidates deliver something that is not just functional but demo-able to a design partner prospect. This means a system that is polished, practical, and powerful enough to support and drive real sales conversations.