



Enterprise Procurement & Vendor Management System

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Overview

The Enterprise Procurement & Vendor Management System is a Java-based software solution that simulates the internal and external communication flows within a large technology company's procurement ecosystem. The system facilitates collaboration among various departments and third-party vendors, enabling efficient processing of procurement requests, legal reviews, and financial approvals. This simulation project mirrors real-world complexity and highlights the significance of ecosystem cooperation across organizational and enterprise boundaries.

Problem Statement

Large technology companies regularly engage in complex procurement processes involving multiple stakeholders such as internal departments (e.g., procurement, IT, finance) and external entities (e.g., hardware, software, or service providers). These processes typically require coordination, negotiation, legal review, and financial approval before a procurement request can be executed. The lack of a unified communication and workflow platform often leads to inefficiencies, delays, and miscommunications.

This project proposes a digital platform that facilitates seamless collaboration between all involved parties, ensuring traceability, transparency, and timely execution of procurement requests. The goal is to simulate a real-world enterprise ecosystem where cooperation among multiple enterprises and departments is essential for delivering value.

Solution

We propose building an ecosystem-driven Swing-based procurement application that simulates the full procurement lifecycle of a large tech company. The system allows internal departments to collaborate on purchase planning, vendor selection, contract approval, and delivery confirmation. It models real-world interactions involving quotation comparison and cross-enterprise logistics.

- Role-based access and workflows
- End-to-end RFQ and quotation workflow including multi-vendor handling, evaluation, and selection

- Cross-enterprise contract review and PO generation
- Third-party logistics coordination
- Status tracking from PR creation to delivery confirmation

The system will feature:

- A centralized dashboard for managing procurement requests
- Role-specific interfaces and task views
- Quotation comparison interface for evaluating competing vendors
- PO status control and conditional access based on approval flow
- Tracking of logistics delivery and warehouse confirmation

Ecosystem Design

I. Network

- Procurement & Logistics Collaboration Network

II. Enterprises (4)

1. Google – Buyer enterprise initiating procurement
2. TSMC – Hardware vendor
3. Samsung – Competing hardware vendor
4. FedEx – Logistics provider

III. Organizations (6)

1. Google: IT Department, Finance Department, Procurement Department, Legal Department, Warehouse
2. TSMC: Sales Department, Compliance
3. Samsung: Sales Department
4. FedEx: Logistics Operations

IV. Role (8)

1. Procurement Specialist (Google)
2. IT Engineer (Google)
3. Finance Analyst (Google)
4. Legal Reviewer (Google)
5. Warehouse Specialist (Google)



6. Sales Manager (TSMC)
7. Sales Manager (Samsung)
8. Shipping Coordinator (FedEx)

Use Cases / Work Requests

1. Create PR

The IT department raises a purchase request for hardware/software needs.

2. RFQ (Request for Quotation) Issuance

Procurement sends RFQs to TSMC and Samsung to collect competitive quotations.

3. Vendor Quotation Submission

TSMC and Samsung respond with quotations, specs, and initial contracts.

4. Quotation Comparison & Selection

Procurement compares submissions and selects the winning vendor.

5. Contract Review

Legal verifies compliance documents and reviews the draft contract.

6. PO Generation

After legal and finance approval, a PO is issued to the selected vendor.

7. Shipping Request

Vendor requests FedEx to ship the ordered items to Google.

8. Delivery and Confirmation

FedEx delivers the goods. Warehouse confirms delivery and condition.

9. Procurement Closure

Upon confirmation, procurement marks the request as completed in the system.

High-Level Component Diagram

