DRUG SUPPLY CHAIN MANAGEMENT

Introduction:

Drug supply chain management involves the coordination and management of the process of drug manufacturing, distribution, and dispensing. It involves the use of technology, logistics, and regulatory compliance to ensure that the right drugs are produced, transported, and delivered to the right place at the right time.

Problem Statement:

The drug supply chain involves the procurement, transportation, storage, and distribution of pharmaceutical products. Due to the critical nature of these products, it is crucial to maintain their quality and safety throughout the supply chain. However, there are several challenges in managing the drug supply chain, such as counterfeit drugs, drug shortages, supply chain disruptions, and inadequate visibility into the supply chain.

Solution:

The drug supply chain typically involves several stakeholders, including drug manufacturers, distributors, wholesalers, Clinics, hospitals, and patients. Effective management of the drug supply chain requires collaboration and communication among these stakeholders to ensure that drugs are available when needed, in the right quantity, and at the right cost. For a drug supply chain management system is to design and implement an efficient and secure system that can address these challenges and ensure the quality and safety of pharmaceutical products throughout the supply chain. This system should provide real-time visibility into the supply chain, facilitate the tracking and tracing of drugs, prevent counterfeit drugs from entering the supply chain, manage inventory levels to prevent drug shortages and enable quick response to supply chain disruptions. The system should also comply with relevant regulations and industry standards to ensure the safety and efficacy of drugs.

Enterprises:

1. FDA
2. Hospital
3. Manufacturer
4. Provider
5. Distributor
6. State Health Department

Organizations:

1. Clinic Organization
2. FDA Organization

3. State Health Department Organization
4. Medical Organization
5. Distributor Organization
6. Manufacturer Organization
7. Hospital Organization
8. Patient Organization

Roles:

1. System Admin
2. FDA Admin
3. State Health Admin
4. Distributor Admin
5. Provider Admin
6. Manufacturer Admin
7. Doctor
8. Clinic
9. Patient
10. FDA organization employee
11. Medical organization employee
12. State Health Department employee
13. Distributor employee
14. Provider employee
15. Manufacturer employee

Flow of the system:

1. The System Administrator is able to log in, adding new states, cities, diseases, drug manufacturers, drug providers, manage drug catalogs, and create accounts for the FDA administrator, State Health Department administrator, Distributor administrator, and Provider administrator.

2. Upon logging in, the State Health Department administrator can add state population data to the system.

3. The FDA administrator has the ability to log in and create accounts for FDA employees and medical organization employees.

4. An FDA employee can log in to order medicine, which will then be processed and moved to the manufacturer panel.

5. Upon logging in, the Manufacturer administrator can create manufacturer user accounts. These users can manage drug products, view orders placed by FDA employees, and assign orders to themselves. Manufacturer users will be responsible for processing orders.

6. The Distributor administrator can log in and create distributor user accounts. Users can then create location-specific warehouses and view processed orders from manufacturers. Once the order has been received, it can be stored in the warehouse, which will store the fixed amount of drugs as per the order processed by the manufacturer.

7. The Provider administrator can log in and create accounts for doctors, patients, and clinic users.

8. Upon logging in, doctors and clinics can place orders for the required drugs. Doctors can also view and manage their orders.

9. After the orders have been placed, the State Health Department administrator can log in to approve them.

10. Once the State Health Department approves the orders, the FDA administrator can then approve them.

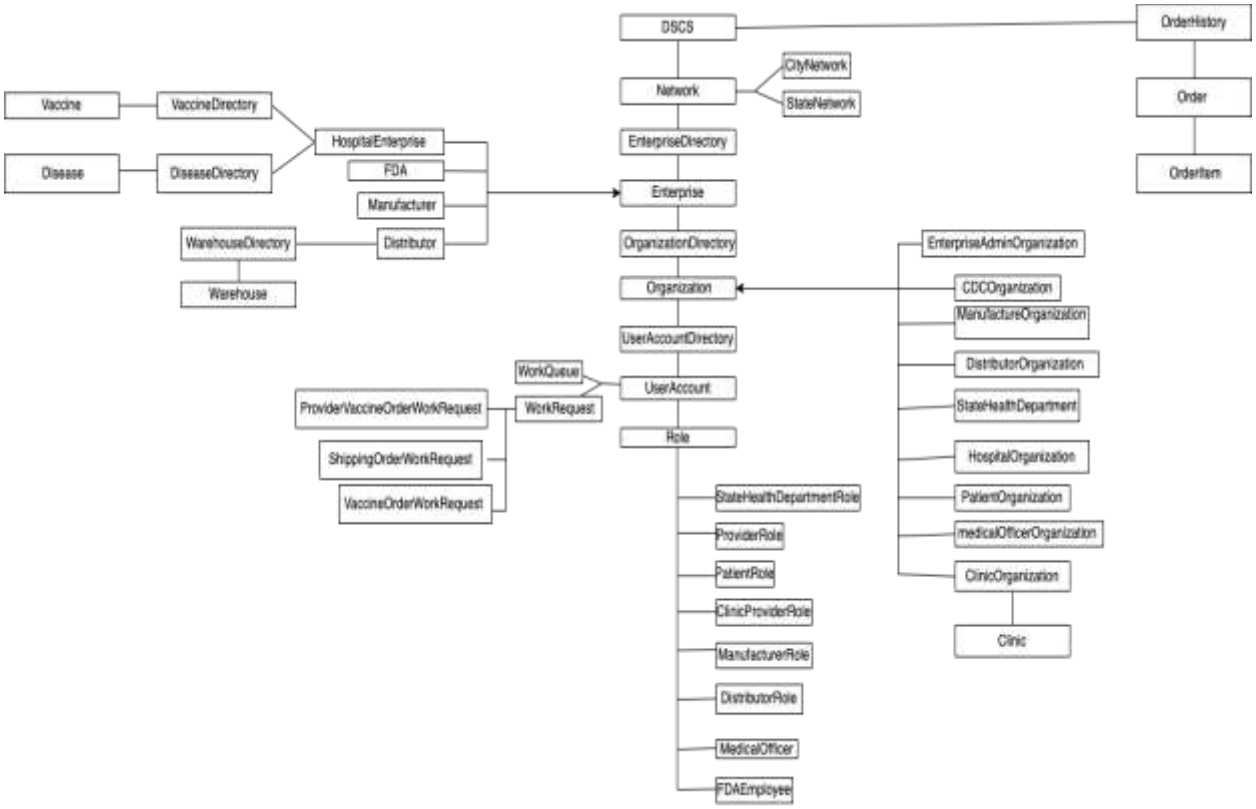
11. Distributor users will then log in to approve and ship the orders. They can check the drug inventory in the warehouse. If the requested quantity is not available, the orders will not be shipped.

12. Once the orders have been shipped and received, the doctor can log in to store the drugs in the hospital inventory. Doctors can administer the drugs to the patients once they are available.

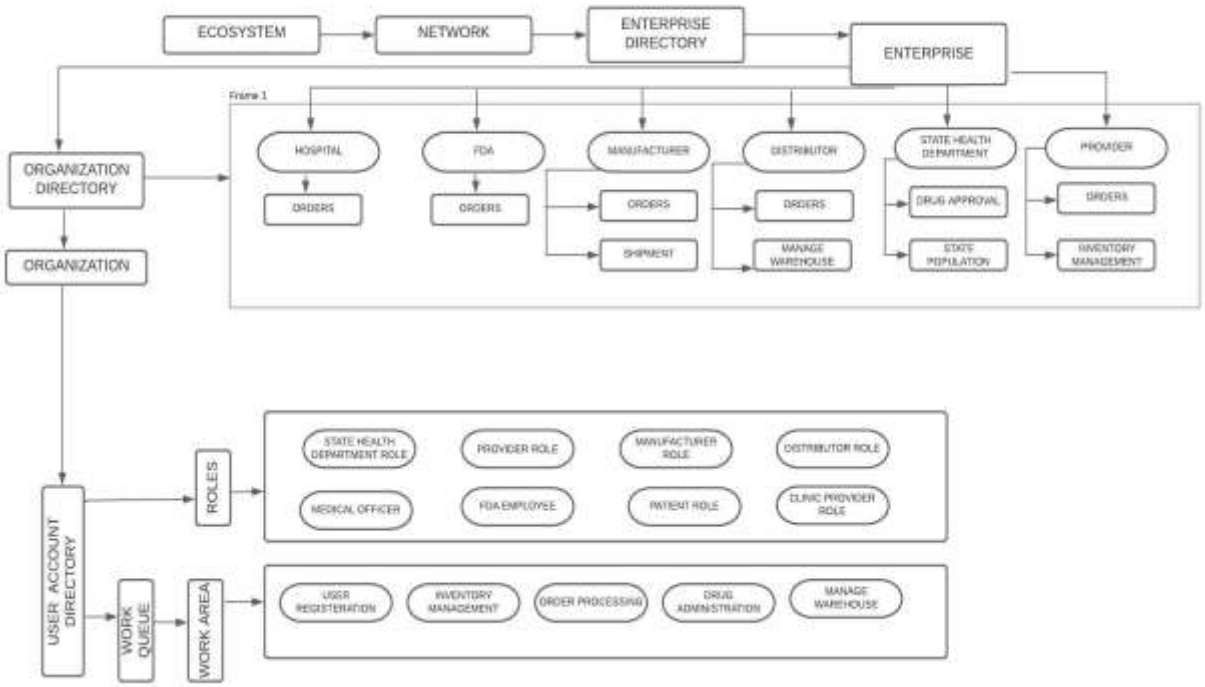
13. The patient can then log in to view their immunization history and download their vaccine certificate.

14. Similarly, clinics can place orders for medicines, follow the approval process, and administer immunizations to patients.

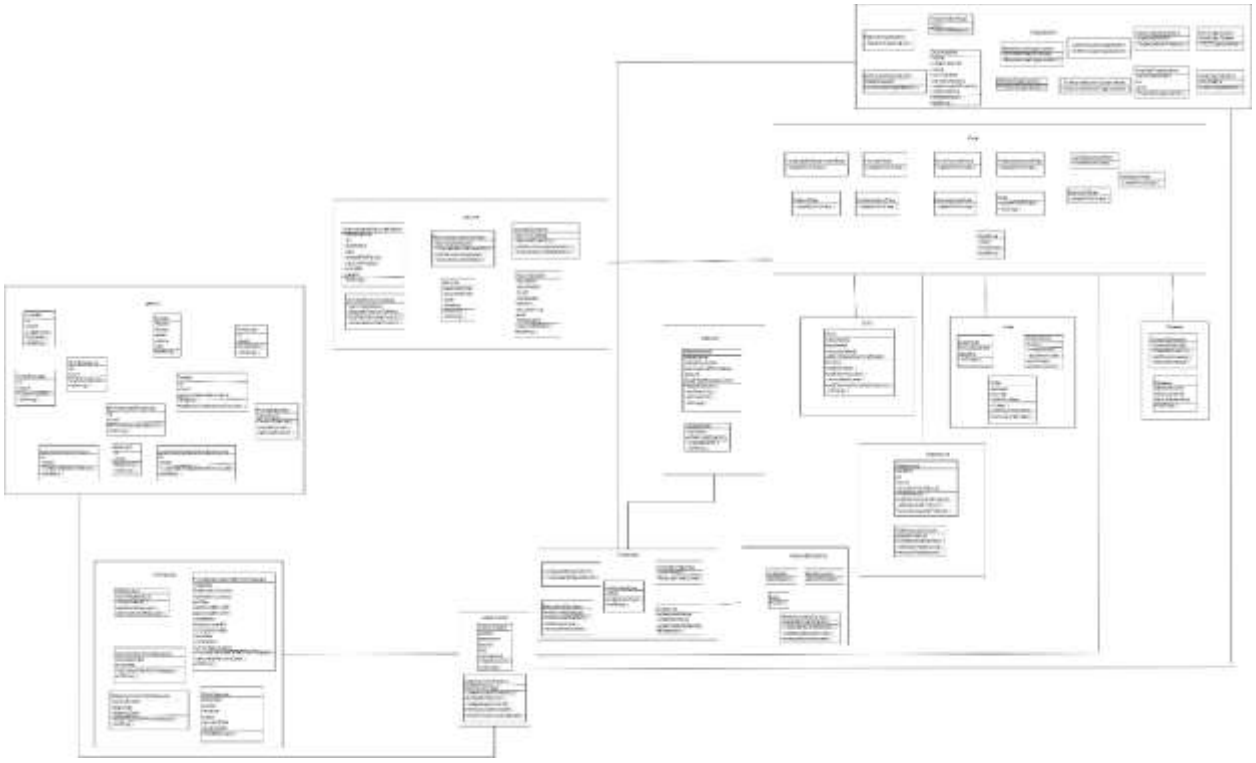
Architecture Diagram:



Component Diagram:



Class Diagram:



Conclusion:

Effective drug supply chain management is essential for ensuring that patients have access to safe, effective, and affordable drugs. It can also help reduce drug shortages, minimize waste, and improve patient outcomes.