



REQUIREMENT GATHERING

Auto-Parts Warehouse Management System

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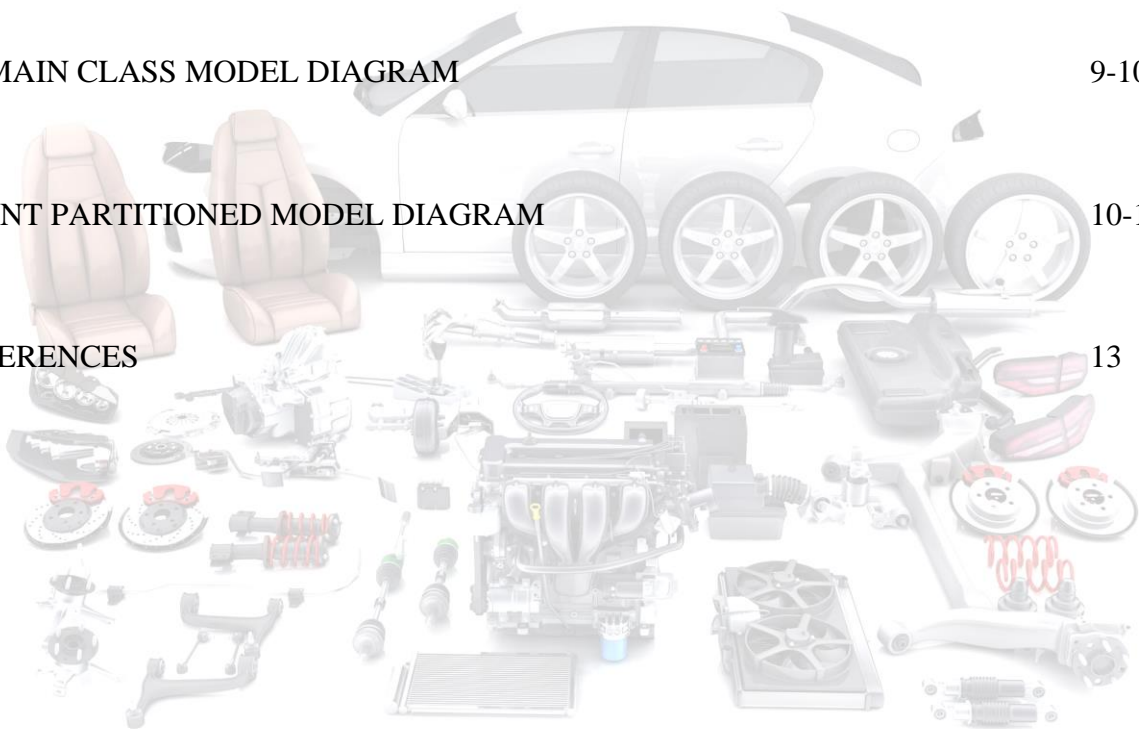
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SYSTEM REQUIREMENTS FOR THE PROPOSED SYSTEM

Functional requirements

1. The system must provide detailed information of storage space, stock, incoming and outgoing products.
2. The system Shall provide alerts and notifications for errors, order placing and delivery.
3. Administrators and supervisors should observe order load and storage operations.
4. Processing and Managing orders shall be done based on priority and delivery time.
5. New orders can be modified up until 11:59pm of the day before pickup date and No cancellation after an order is placed.
6. Customers from suburbs and cities can receive up to five deliveries per day and regional customers can receive 2 per day.
7. Each order must have a pickup and packing time slot selected.
8. The system shall provide outbound and inbound documentation.
9. Operators and workers should maintain even shelf load and avoid one-sided loads for better dynamic warehouse.
10. **Authorization:** The system should allow manager and warehouse administrator to update details of customers, storage locations, change order, processing and shipment status.
11. **Tracking:** Wireless devices like rf scanner must track, record and have the detailed information of stock movements, order processing and shipment.
12. **Data management:** The database is managed by the cloud database and server.
13. **Reporting Requirements:** The system shall Provide advanced business analytics to improve the future order process and sales. Generate crystal reports and billing.

Non-Functional Requirements

1. **Usability:** The system should be available over the intranet so that the Users like the warehouse managers & clerks can use the system from their respective locations which could be anywhere in the organization
2. **Performance:** The system must utilize the latest radio frequency RFID technology for reducing logistics cost, error-free billing storage and order-picking system. The system should use scheduling method that allows products to be received, checked and dispatched within 12 hours if required
3. **Recovery methods:** In case of database failure or corruption, backup can be retrieved from the cloud storage by the warehouse administrator. If there is any hardware or device failure, the system provides alerts to replace or update the device.
4. **Response time:** The manager and customer staff should respond to the customer queries within 30minutes. The system shall provide the crystal reports and analytics on weekly basis, i.e. on the 7th day of each week.
5. **Scalability:** The system usage limit must be scalable enough to support 10,000 users at a time.
6. **Security Requirements** The system should use ASA firewall technology and Cisco 6513 switches for more effective routing of traffic and security (McCooey, E ,2017). The system must use 128-bit Secure Sockets Layer (SSL) encryption for transfer of data and communication. Realtime Monitoring security of wireless communication technology to ensure privacy and accuracy in order processing and tracking.
7. **Availability:** The system should be available to the all the users like warehouse administrator, manager, supplier, customers and staff 24/7. Users can access it using a web browser via mobile or tablet or computer.
8. **Accessibility:**
Inventory Management: Access to this system is limited to warehouse manager and staff accounts. Any changes to the inventory (CURD operation) must be logged in along with the actor's ID or username.

Distribution center System: Access to this system is limited to supplier, distribution center staff, logistics and shipment supervisors. At the end of every week, all data should be backed up and stored in cloud for generating reports and analytics.

Customer Management System: Access to this system is limited to customers, supplier, administrator and managers. Any changes to the customer system (CURD operation) must be logged in along with the actor's ID or username.

9. Reliability: The system provides storage of all databases on the cloud database servers.

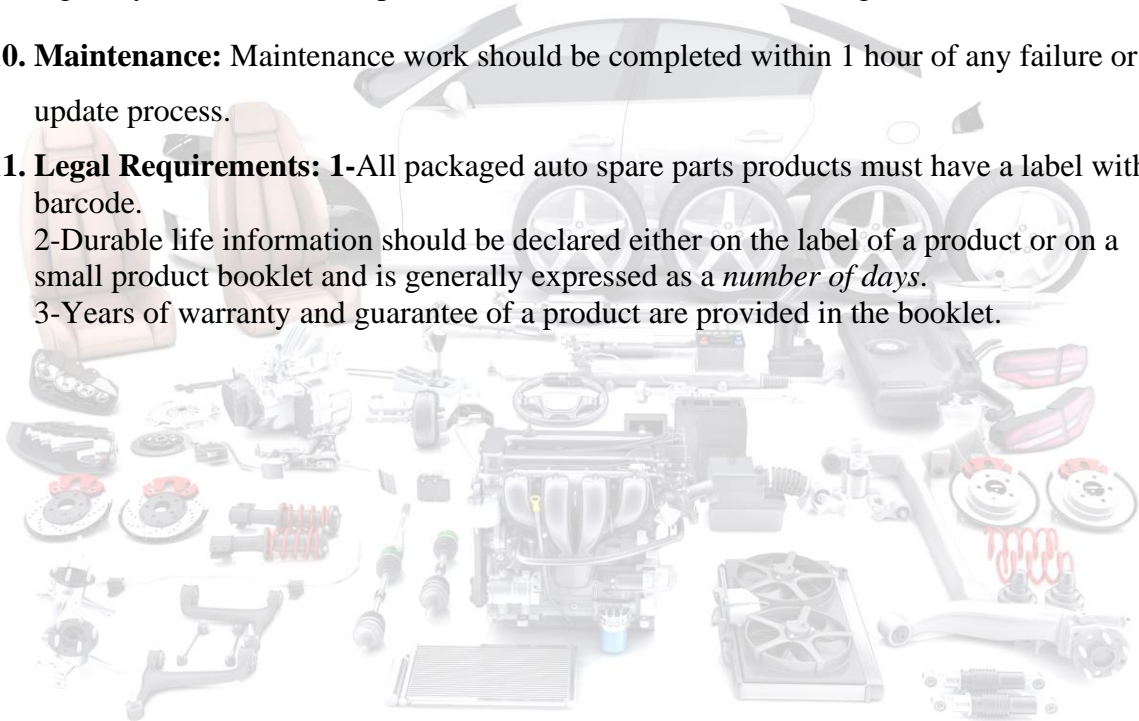
The main part of reliability of this system is the backup of the reports and database is regularly maintained and updated to reflect the most recent changes.

10. Maintenance: Maintenance work should be completed within 1 hour of any failure or update process.

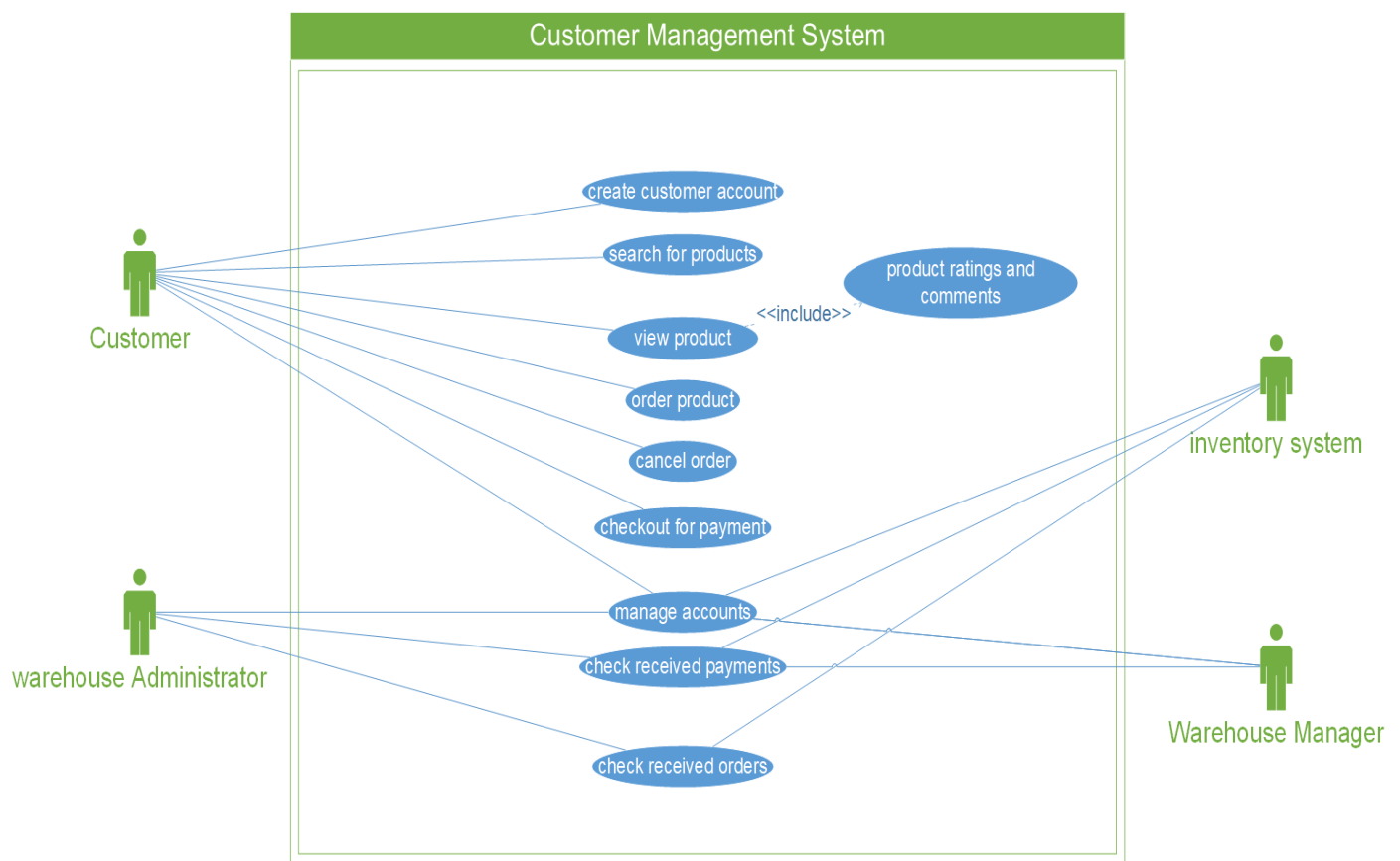
11. Legal Requirements: 1-All packaged auto spare parts products must have a label with barcode.

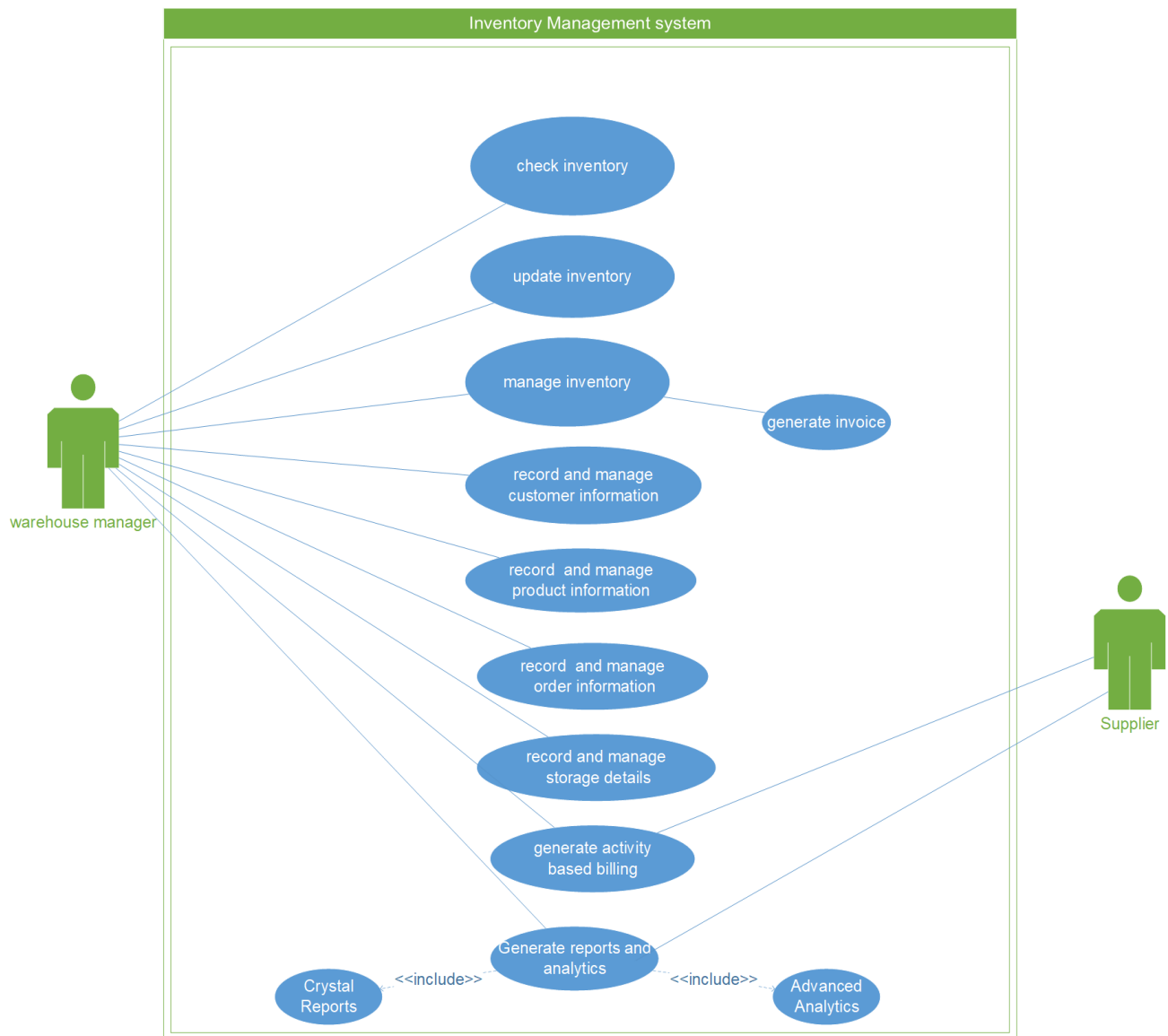
2-Durable life information should be declared either on the label of a product or on a small product booklet and is generally expressed as a *number of days*.

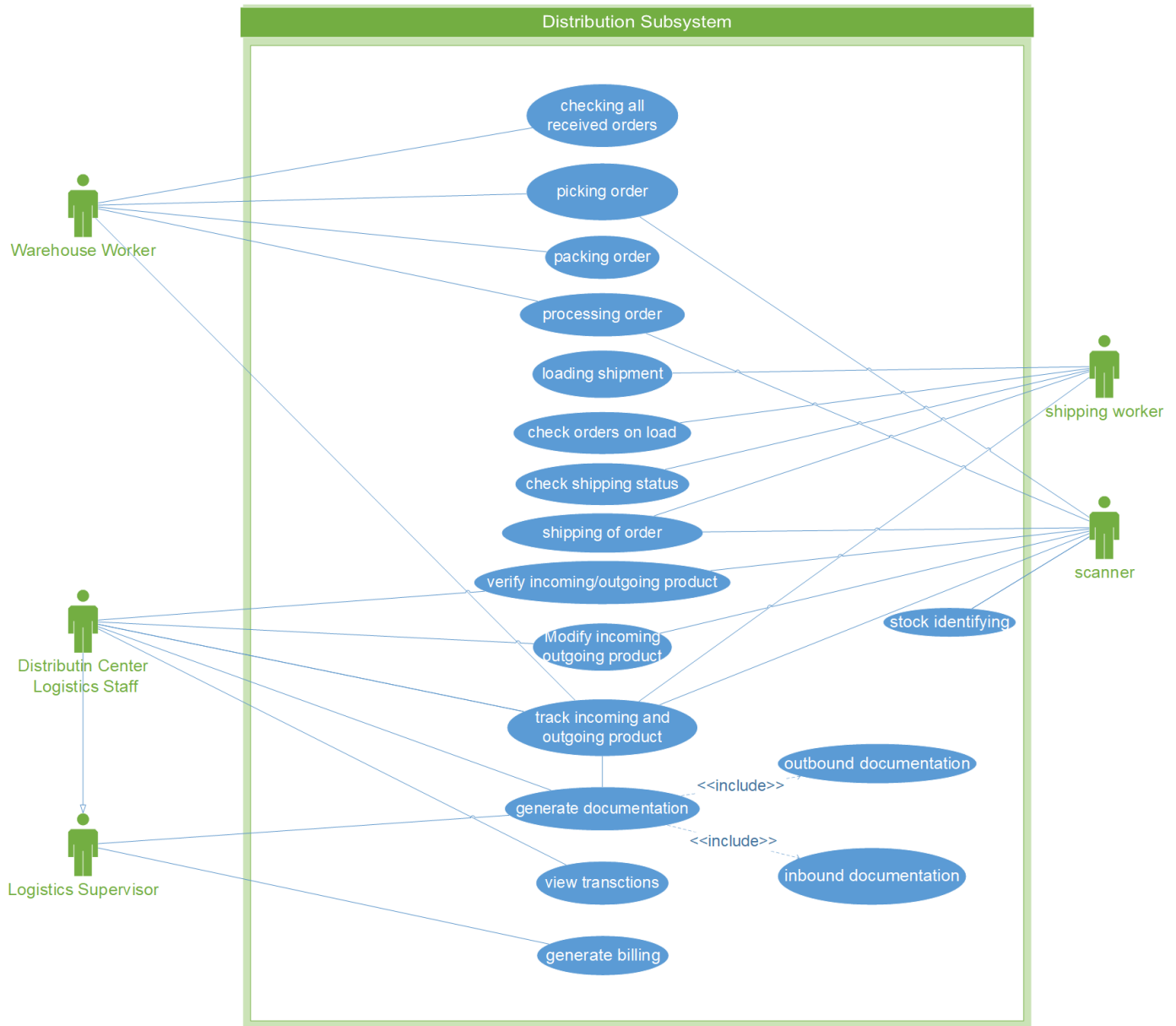
3-Years of warranty and guarantee of a product are provided in the booklet.



USE CASE DIAGRAMS FOR THE PROPOSED SYSTEM THAT SHOW MAJOR USE CASES AND ACTORS.







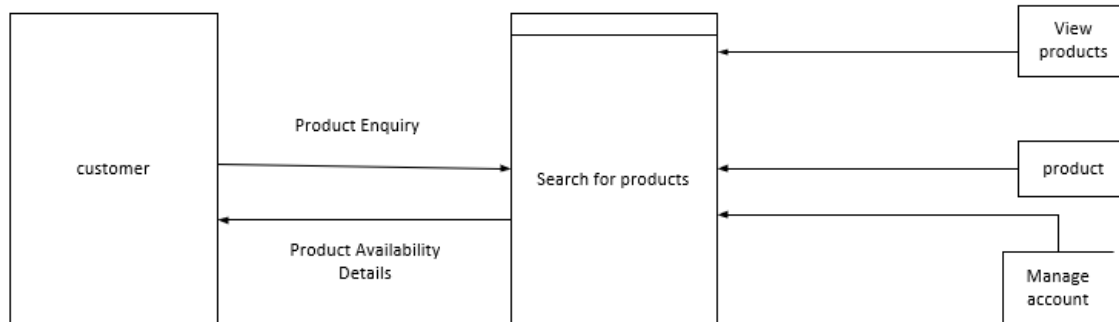
Domain model class diagrams for the proposed system.



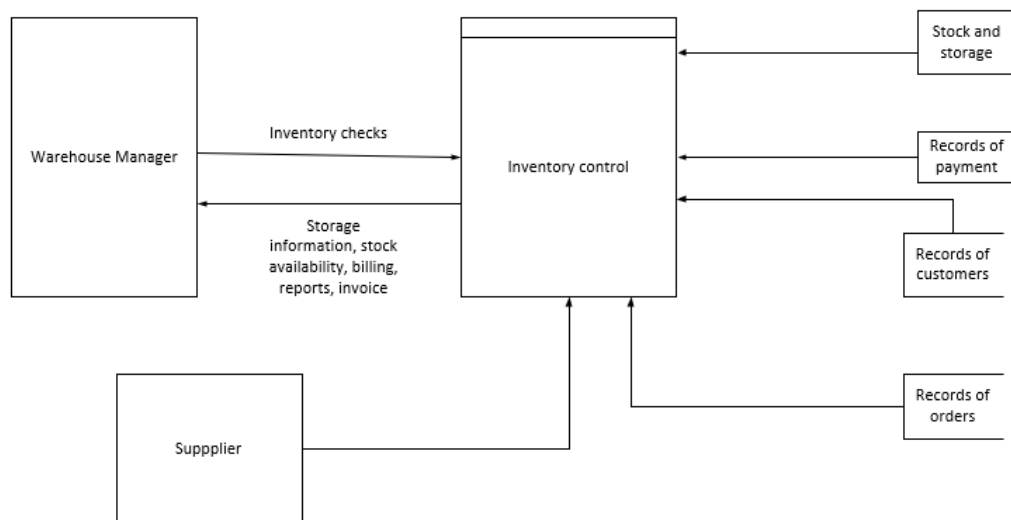
Event-partitioned system models

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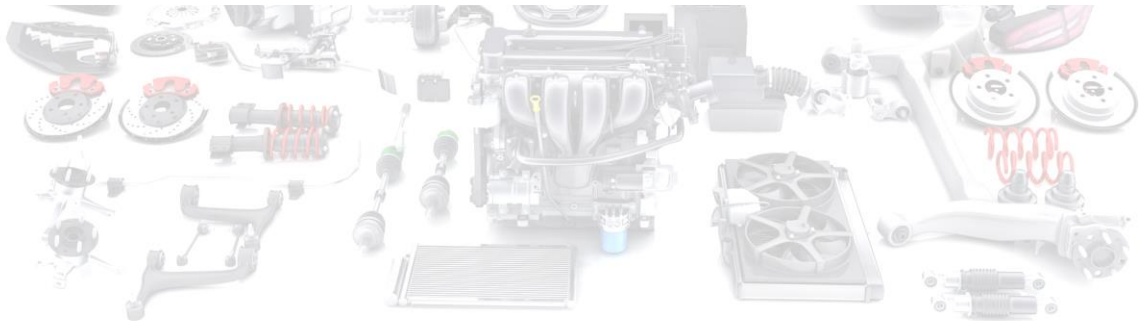
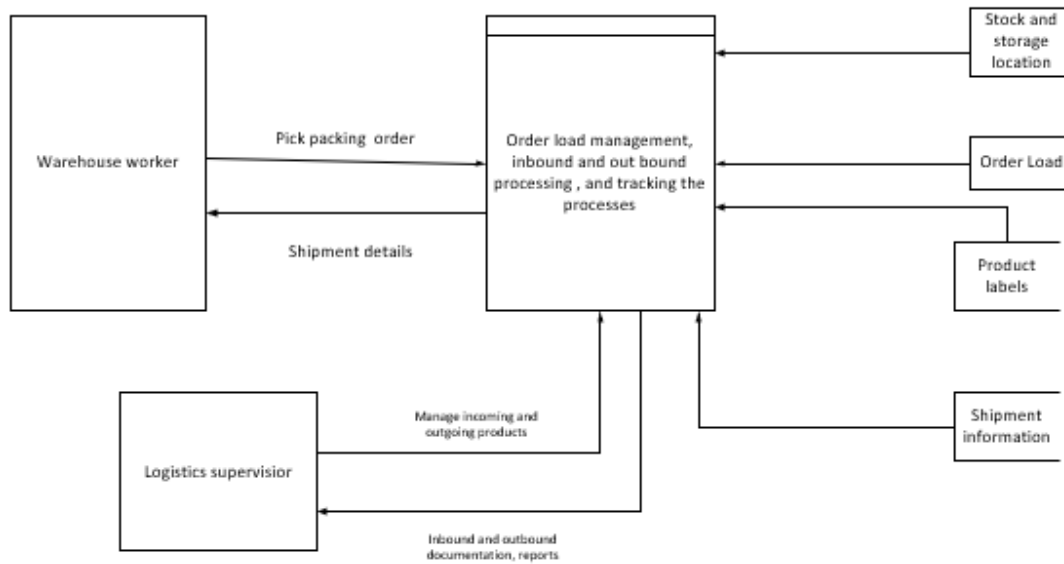
Customer Management System

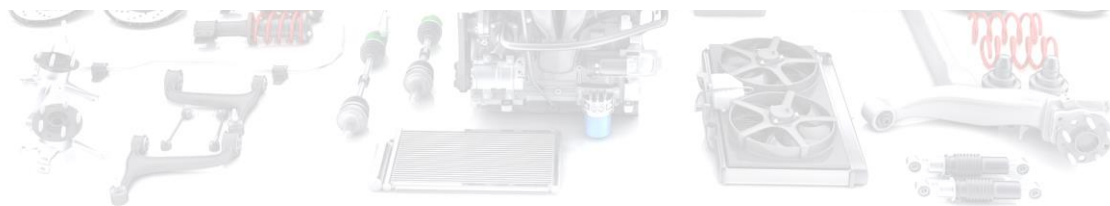
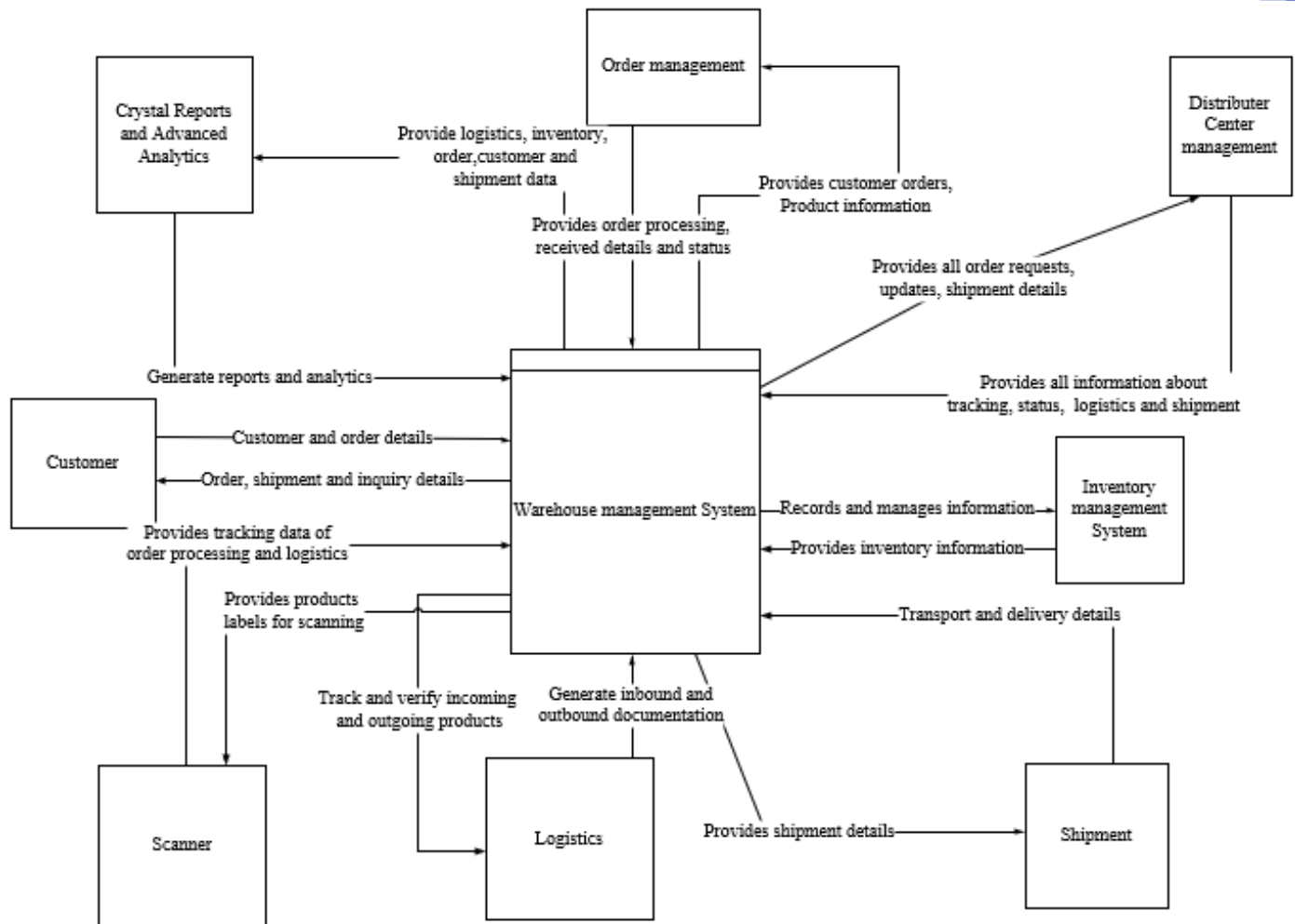


Inventory Management System



Distributor Management System





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- Choy, K. L., Ho, G. T., S., Lee, C. K., & H. (2017). A RFID-based storage assignment system for enhancing the efficiency of order picking. *Journal of Intelligent Manufacturing*, 28(1), 111-129. doi:<http://dx.doi.org.ezproxy.csu.edu.au/10.1007/s10845-014-0965-9>

