

**HOLY ANGEL UNIVERSITY
SCHOOL OF COMPUTING**



**SYSTEMS ANALYSIS AND DESIGN
FINAL PROJECT**

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Submitted To:
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Date:
March 26, 2025

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I. **Current Business Processes and Systems**

1. **What are the existing business processes and systems within the Computerland It Solution Inc. | Angeles City?**

Computerland IT Solution Inc. is an IT services and products company that provides a wide range of technology solutions tailored to meet the needs of individuals and businesses. The company specializes in information technology services, product sales, as well as repair solutions and installations, ensuring clients have access to high-quality hardware, software, and support.

Its business operations include:

- **Sales Transactions:** Sales are managed through a systematized product inventory with a few features being handled manually such as writing of the official receipt. This process ensures a smooth purchasing experience and is a blend of both automated and manual work.
- **Repair and Maintenance Services:** Provides troubleshooting, diagnostics, and repair services for desktops, laptops, printers, and other IT equipment. Maintenance services include hardware upgrades, software installations, and system optimizations.
- **IT Consultation and Support:** Offers expert advice on IT solutions tailored to clients' business needs, including network setup, cybersecurity recommendations, and software integration. Provides ongoing technical support for troubleshooting and system enhancements.
- **Installation Services:** Handles the installation of hardware components, software applications, and network infrastructures, ensuring seamless integration with existing systems.
- **Customer Engagement:** Utilizes various communication channels (Viber, Messenger, SMS, and face-to-face interactions) to handle inquiries and orders.
- **Data Management:** Business documentation is primarily managed using Microsoft Excel and stored in the cloud via Google Sheets.
- **On-Site and Remote IT Support:** Provides on-site technical assistance and remote troubleshooting for businesses and individuals to ensure minimal downtime and operational efficiency.

2. **How do employees and departments interact within the organization?**

Employees at Computerland IT Solutions Inc. communicate and collaborate through a structured workflow that ensures efficiency and smooth operations. Each department has specific roles and responsibilities, contributing to the overall productivity of the organization.

- **Sales Personnel:** Responsible for guiding customers through the purchasing process, ensuring they select the right products based on their needs. They manage transactions using a stock inventory system that tracks product availability and sales.
- **Repair Technicians:** Handle customer device repairs by systematically logging customer data, diagnosing issues, conducting device testing, and completing

service requests. They ensure that all repairs are documented for future reference and quality assurance.

- **Customer Service Representatives:** Act as the primary point of contact for clients, addressing inquiries, resolving concerns, and facilitating communication between departments. They use multiple channels, including phone, email, Viber, Messenger, SMS, and in-person interactions, to provide assistance and maintain customer satisfaction.
- **IT and Data Management:** Ensures that business data, including sales records, repair logs, and customer interactions, is securely maintained online for organization-wide accessibility. Cloud-based storage solutions like Google Sheets allow employees to retrieve and update information in real time, promoting efficiency and collaboration.

3. What software or technology is currently in use?

Computerland IT Solutions Inc. utilizes various tools to streamline operations:

- **Microsoft Excel & Google Sheets:** Manage business records, sales tracking, and customer data, with Google Sheets enabling real-time collaboration.
- **Product Inventory System:** A computerized system for stock management and sales transactions, ensuring efficient inventory tracking.
- **Communication Tools:** Viber, Messenger, and SMS facilitate quick customer interactions, order inquiries, and service updates.
- **Operating System:** Windows 7 is still used for inventory management, though it may require upgrading for better security and support.

4. Are there any legacy systems in place?

Yes, the company still uses Windows 7 for its inventory management system. While it remains functional, the lack of updates and security support suggests the need for an upgrade to improve efficiency, security, and compatibility with modern software.

II. Identification of Problems and Challenges

1. What issues or challenges are hindering the Computerland IT Solution Inc. | Angeles City operations and growth?

The biggest challenge is competition from local stores and online platforms like Shopee, Lazada, and Facebook Marketplace. Customers compare prices online before visiting the store so it's hard to compete just on pricing.

- **Competition with Online Platforms:** Local stores and major e-commerce platforms like Shopee, Lazada, and Facebook Marketplace offer lower prices, making it difficult to compete solely on cost.
- **Promotional Discounts:** Online platforms attract buyers with discounts, vouchers, and exclusive deals, creating an uneven pricing advantage.
- **Price-Driven Consumer Behavior:** Many customers prioritize cost over quality and after-sales support, making in-store pricing harder to justify.
- **Value Perception:** While the company offers tested products, expert consultation, and immediate support, these benefits need stronger emphasis to attract more customers.
- **E-Commerce Growth:** As online shopping rises, adopting digital marketing strategies and integrating online sales may be essential to remain competitive.

2. Are there any bottlenecks, inefficiencies, or communication problems?

One inefficiency is we rely on manual processes for their repair services. We document customer and unit details manually. This can slow down service handling and record-keeping.

- Manual process increases risk of lost records, incorrect data entry and longer processing time for repairs.
- Without automation, tracking repair history and follow-ups can be inefficient and cause delay in customer service.

Also, using **Windows 7 for the inventory system is not supported and poses security risks**, affecting operational efficiency.

- **Security Risks:** Windows 7 no longer receives security updates, making the system vulnerable to threats.
- **Compatibility Issues:** Newer software and hardware may not work properly, disrupting inventory management.
- **Limited Scalability:** Lack of integration with modern tools and cloud-based solutions restricts business growth and efficiency.

3. Do employees or customers face any difficulties with the current system?

Yes, one of it being is that customers often compare in-store prices with online listings, where discounts and promotions create a perception of lower costs. This makes it

harder to justify in-store pricing and close sales, despite added value like expert support and product reliability.

- **Time-Consuming Price Justifications:** Employees spend extra time explaining higher in-store prices, emphasizing product reliability, warranty, and immediate support.
- **Lost Sales to Price-Driven Customers:** Customers who prioritize lower prices over service often buy elsewhere, affecting overall sales.

Additionally, **complaints regarding repair service turnaround time and follow-ups require clear communication and transparency in order for it to be effective.**

- **Repair Delays:** Repairs often take longer than expected, leading to customer dissatisfaction.
- **Inefficient Follow-Ups:** Without proper tracking, follow-up communication is delayed, frustrating customers.
- **Lack of a Digital System:** Since the SME does not have a repair tracking system, monitoring customer requests would be difficult, affecting service efficiency.

4. Have there been any recent incidents or recurring problems?

There have been no major system failures or data loss in recent years, but relying on older software poses a risk of future compatibility issues.

- **Risk of System Failure:** While backup measures exist, older systems will eventually fail, disrupting operations.
- **Scalability Limitation:** As the business grows, outdated software will become a major constraint, requiring a transition to modern, cloud-based, or automated solutions.

The most frequent recurring issue is customer dissatisfaction with **price differences**, requiring extra time to explain pricing justification.

- **Unrealistic Price Expectations:** Customers expect in-store prices to match online platforms, which is not feasible as well as healthy for the business of a physical store.
- **Enhancing Value Communication:** We need to emphasize the benefits of in-store purchases, such as product reliability, expert consultation, and after-sales support.
- **Long-Term Price Perception Strategy:** Addressing price concerns requires marketing, competitive pricing, or loyalty programs to retain customers.

III. Proposed Solutions

- 1. What specific solutions are being recommended to address identified problems or capitalize on opportunities? Describe your proposed solution in a very detailed manner.**

To compete with e-commerce sites, Computerland IT Solution Inc. should have a strong digital marketing strategy and expand its sales channels online. This will increase visibility, attract more customers and customer engagement. Here are the strategies to be implemented:

A. E-Commerce Presence

Develop an official e-commerce platform, like a dedicated website with online store, where customers can purchase directly. Partner with established platforms like Shopee and Lazada to reach a wider audience who prefers to shop on well-known marketplaces. This way, Computerland IT Solution Inc. can compete with online retailers while maintaining its credibility as a trusted IT products and services seller.

B. Exclusive Online Promos

To attract more online customers, offer exclusive promos like discounts, bundled deals and seasonal sales only available on e-commerce platforms or partnered online marketplaces. Limited time offers and loyalty-based incentives like redeemable points or referral discounts can make customers choose Computerland IT Solution Inc. over competitors. These promos not only drive sales but increase brand awareness and customer retention.

C. Digital Marketing

A well-planned digital marketing is needed to increase brand awareness and drive traffic to the online store. Use social media advertising on Facebook, Instagram and TikTok to reach a broader audience. Content marketing like blogs, video tutorials and IT-related product guides can establish the company as industry expert while engaging potential customers. SEO techniques can be applied to ensure the website ranks higher in search results so customers can easily find the products and services online.

D. Educational Content and Support

One of the biggest challenges for physical stores competing with online retailers is justifying the price difference. Computerland IT Solution Inc. can counter this by providing educational content that highlights why customers should buy from them instead of unknown online sellers. This can be blog posts, comparison videos and customer testimonials emphasizing product reliability, warranty coverage and after-sales technical support. By educating customers on these benefits, the company can strengthen its value proposition and build trust with the audience.

E. Customer Loyalty Programs

A customer loyalty program can help retain customers and drive repeat business. Referral programs where customers get discounts or store credits for referring Computerland IT Solution Inc. to others can generate new sales. Membership programs that offer benefits like early access to sales, extended warranties or exclusive customer support can also keep customers loyal to the brand. By putting customers above price comparison, the company can build a loyal customer base.

2. What are the technical and non-technical requirements for implementing these solutions? Identify at least 3 technical and 3 non-technical requirements, describe each.

A. Expansion of Online Sales and Digital Marketing

To increase competitiveness against online platforms, the company must establish an e-commerce presence and enhance its digital marketing strategies.

i. Technical requirements:

- **Development of an E-Commerce Website** – The company needs an e-commerce website with complete e-commerce functionality so that customers can browse products, purchase products, and securely complete financial transactions.
- **Secure Payment Gateway Integration** – The platform should allow for multiple payment options such as credit/debit cards, e-wallets, and bank transfers and should facilitate secure payments and data protection.
- **SEO and Digital Ad Tools** – SEO and social marketing on Facebook, Instagram, and Google Ads will assist in building traffic to a website and consumer engagement.

ii. Non-technical requirements

- **Staff Training in Internet Selling and Customer Interaction** – Staff must be trained to deal with online inquiries, place orders in a prompt manner, and provide customer service via online media.
- It is imperative to establish partnerships with delivery and logistics companies; the company should manage reliable courier services to deliver goods on time and safely.
- **Customer Service Improvements** – Installing a live chat support function or an artificial intelligence chatbot will enhance customer engagement and instant responses to questions or issues.

B. Digital Repair Management System

To improve efficiency in handling repair services, a cloud-based digital repair management system must be implemented.

i. Technical requirements:

- **Cloud-Based Repair Record Database** – Customer and repair records need to be retained in a safe, cloud-based database in order to provide for simple access and retrieval.
- **Automated Update Notification System** – Instant updates on the status of the customers should be provided to them through SMS, email, or messaging applications such as Messenger or WhatsApp to inform them.
- **Integration with Inventory Tracking** – The system needs to be integrated with the inventory tracking system to verify the inventory of the parts needed for repair and avoid delays.

ii. Non-technical requirements:

- **Training of Staff on the New System** – The staff must be trained to use the computerized repair management system effectively to ensure smooth functioning and proper service tracking.
- A smooth transition plan from paper to electronic documentation is crucial; this transition from paper records to electronic ones should be achieved in stages, thereby enabling the employees to adapt to the new system without interfering with regular operations.
- Client education regarding the newly implemented procedure is required; customers should be made aware of the digital repair tracking system and the means by which updates can be verified, thereby providing a smooth experience.

C. Improving the Inventory System

Since Windows 7 is outdated and poses security risks, the inventory system must be upgraded to ensure compatibility, security, and efficiency.

i. Technical requirements:

- **Windows 7 Upgrade to a New Operating System (Windows 10 or 11)** – The inventory software must be upgraded to a supported and secure operating system to avoid security breaches and software compatibility issues.
- Cloud-based inventory management solutions provide real-time tracking of stock, reduce the risks of overstocking and stockouts, and optimize the overall effectiveness of inventory management functions.

- **Regular Cybersecurity Maintenance and Upgrades** – The use of firewalls, antivirus programs, and regular system upgrades secures organizational information against cyber attacks.
- ii. **Non-technical requirements:**
 - **Training the Staff on the New System** – The employees have to be taught how to handle the new inventory management system in order to properly use and manage it.
 - **Software and Hardware Upgrade Budget** – Funds have to be set aside for new hardware, software licenses, and security products for system performance maintenance.
 - **Ensuring Minimal Downtime During the Transition** – To minimize as much downtime as possible during the transition phase, there should be a system migration plan to prevent any major disruption in control of inventory and day-to-day business.

3. How will these solutions improve business processes and systems?

The implementation of proposed digital transformation initiatives will provide **Computerland IT Solution Inc.** with a robust platform for optimizing operational efficiency, enhancing security, increasing sales, improving customer satisfaction, and driving long-term growth. These technologies will enable the company to compete effectively with online platforms while streamlining in-house business processes.

A. Operational Efficiency

Automating repair tracking and inventory management will reduce paperwork, minimize errors, and improve response times. Cloud-based integration allows employees to access real-time information, ensuring faster service delivery. A computer-based repair tracking system will enable real-time monitoring, reducing delays and miscommunication. A cloud-based inventory system will help prevent shortages and overstocking, improving supply chain management. Eliminating manual documentation allows employees to focus on more valuable tasks, increasing productivity and service efficiency.

B. Enhanced Security

Upgrading from Windows 7 to a modern operating system is essential for cybersecurity and software compatibility. Modern operating systems provide built-in firewalls, encryption, and security features to prevent unauthorized access and data breaches. Regular system updates will address vulnerabilities and strengthen IT infrastructure. Cloud data backup ensures protection against data loss caused by hardware failure, accidental deletion, or cyberattacks.

C. Increased Sales Prospects

Expanding the company's presence in online sales channels will attract more customers and boost revenue. An e-commerce platform will allow customers to purchase IT products and services conveniently. Digital marketing strategies, including

SEO, social media, and online advertisements, will increase brand awareness and drive more traffic to the company website. Offering exclusive online promotions and loyalty rewards will encourage repeat purchases and improve customer engagement.

D. Improved Customer Experience

Enhancing communication channels and implementing tracking systems will improve customer satisfaction. Automated real-time notifications will keep customers informed about repair progress, order status, and promotions via SMS, email, or chatbots. A dedicated online support team or chatbot can provide instant responses to inquiries, improving customer interaction. A self-service online portal will enable customers to track orders, repairs, and warranties without needing to visit the store.

E. Scalability and Expansion

A structured digital transformation strategy will enhance operational capabilities and position the company for future growth. A cloud-based platform will provide the flexibility to expand business operations, introduce new product offerings, and reach a broader market. Automated reporting and analytics will support data-driven decision-making, optimizing sales and service improvements. With automation, online selling, and strengthened cybersecurity, the company will remain competitive and aligned with industry trends.

What is the estimated cost and timeframe for implementation? Present a detailed Cost-Benefit Analysis and Work Breakdown Structure.

Costs (Estimated):

1. Development Costs (Estimated)

a. Digital Marketing and E-Commerce Expansion

- Website Development (E-commerce platform with basic CMS): ₱100,000
- Payment Gateway Integration (GCash, Maya, Credit/Debit Cards): ₱50,000
- SEO Optimization & Digital Marketing Setup: ₱40,000
- Social Media Ads & Content Creation (Initial Budget): ₱50,000

Total Cost for Digital Marketing & E-Commerce: ₱240,000

b. Digital Repair Management System

- Cloud-Based Database for Repair Documentation: ₱80,000
- Automated Notification System (SMS/Messenger API Integration): ₱50,000
- Inventory System Integration for Repair Tracking: ₱100,000

Total Cost for Repair Management System: ₱230,000

c. Inventory System Upgrade

- Migration from Windows 7 to Windows 11: ₱15,000 (License for 5 PCs)
- Cloud-Based Inventory Management System: ₱100,000
- Cybersecurity Software & Maintenance (Firewall, Antivirus, Encryption): ₱50,000

Total Cost for Inventory System Upgrade: ₱165,000

d. Customer Support Enhancement

- AI Chatbot / Automated Inquiry System for Website & Social Media: ₱50,000
- Customer Feedback System Development: ₱40,000
- Self-Service Online Customer Portal: ₱80,000

Total Cost for Customer Support Enhancement: ₱170,000

e. Testing and Deployment

- System Testing & Bug Fixing: ₱50,000
- Deployment and Staff Training: ₱70,000

Total Cost for Testing and Deployment: ₱120,000

Total Development Cost: ₱925,000

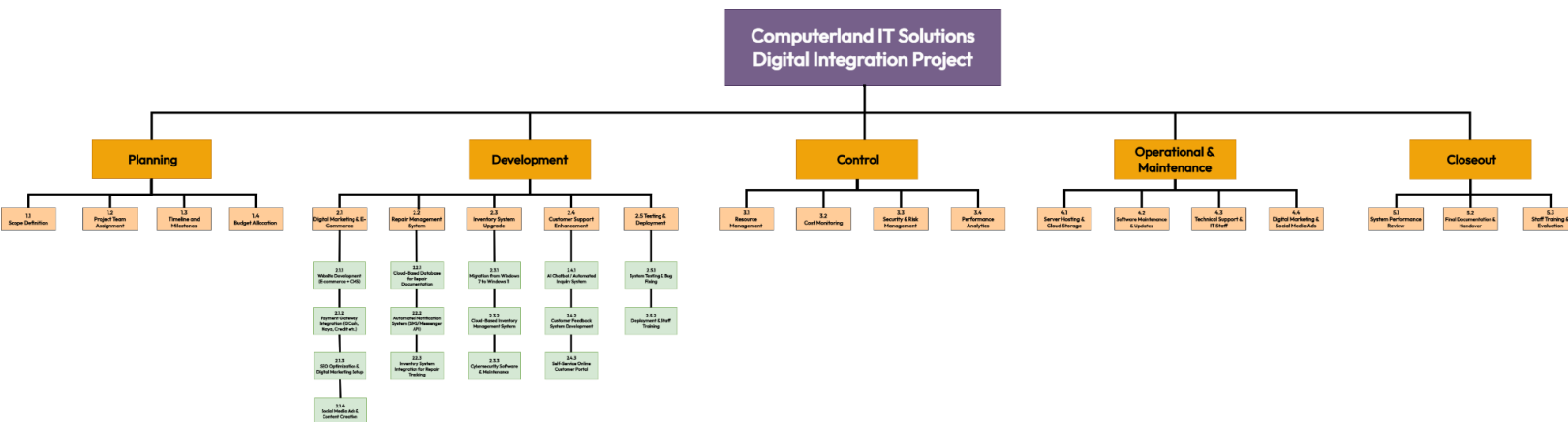
2. Operational Costs (Estimated Monthly)

- Server Hosting & Cloud Storage: ₱15,000/month
- Software Maintenance & Updates: ₱10,000/month
- Technical Support & IT Staff: ₱20,000/month
- Digital Marketing & Social Media Ads: ₱25,000/month

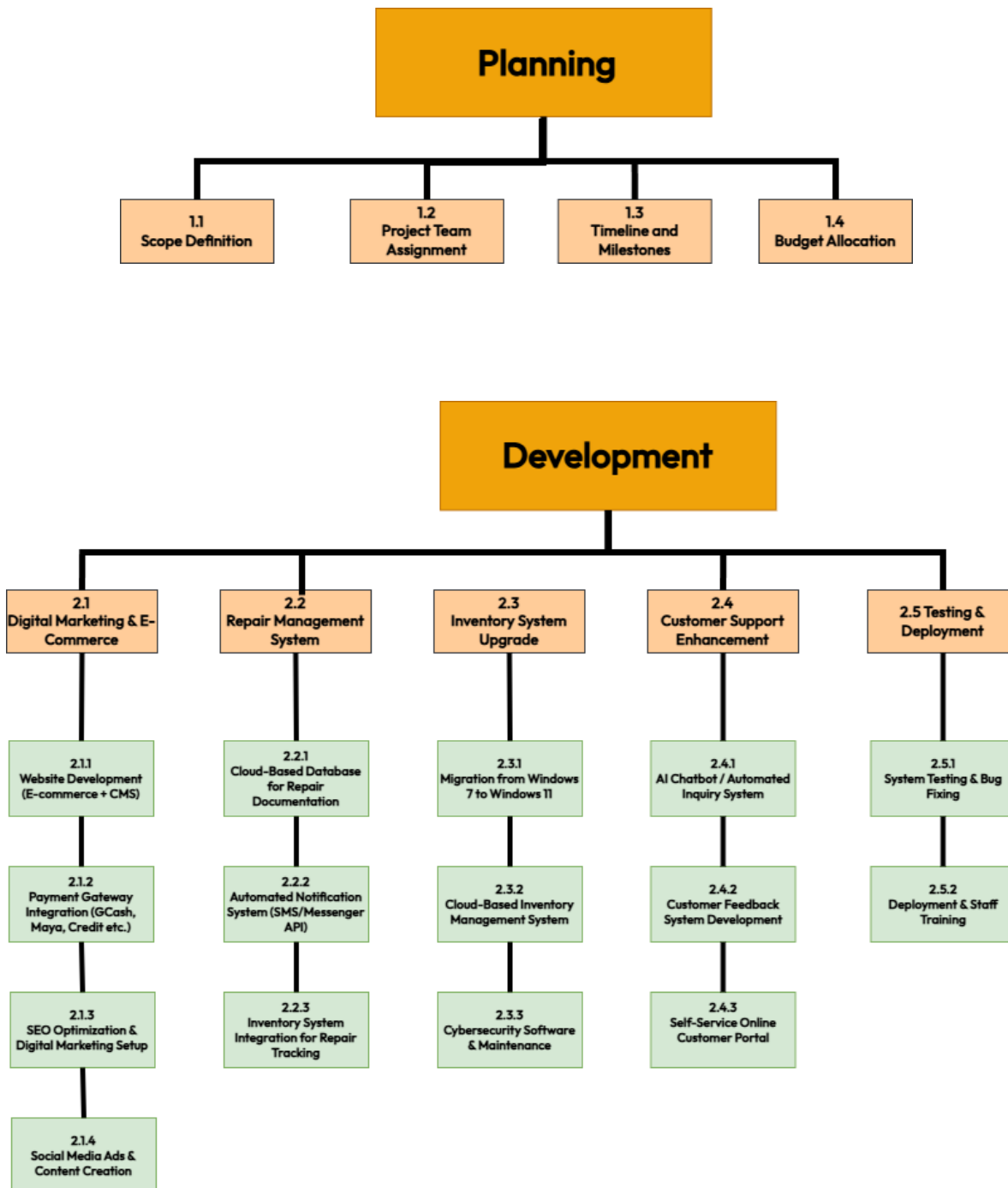
Total Monthly Operational Costs: ₱70,000/month

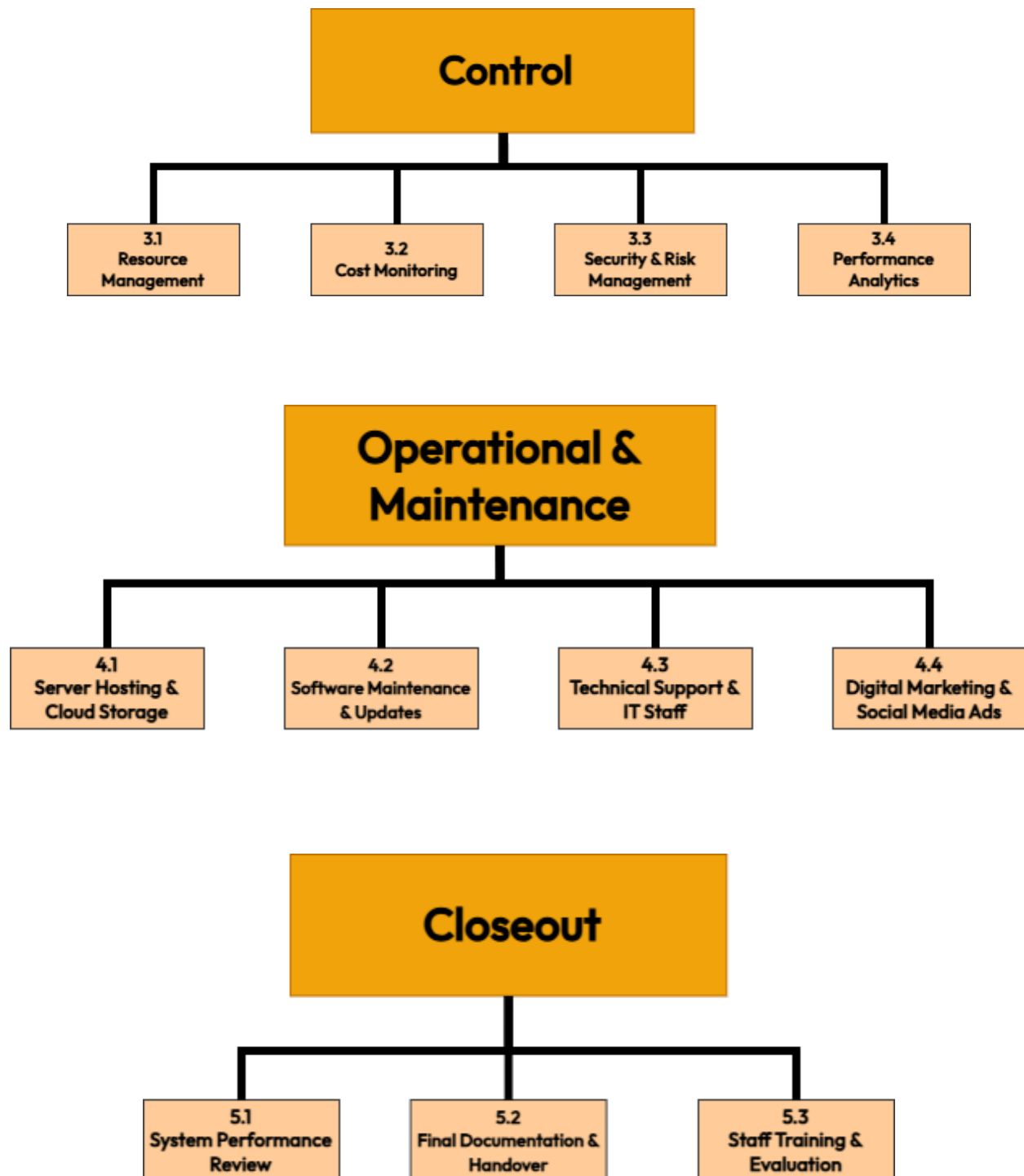
Note: Prices may vary Depending on product subscription, It may subscribe monthly, every 6 months or yearly.

Proposed Work Breakdown Structure:

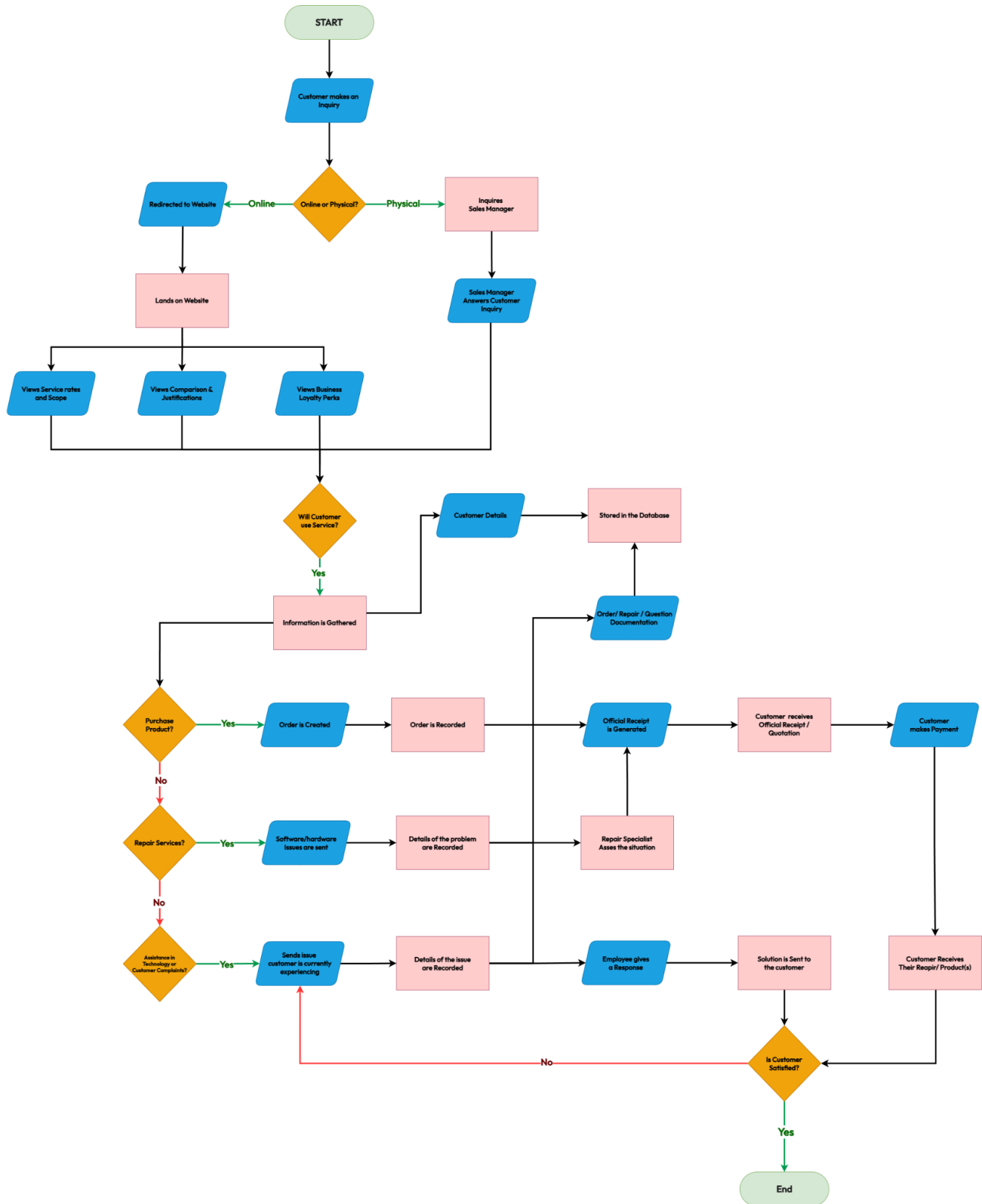


Proposed Work Breakdown Structure
(Zoomed In):

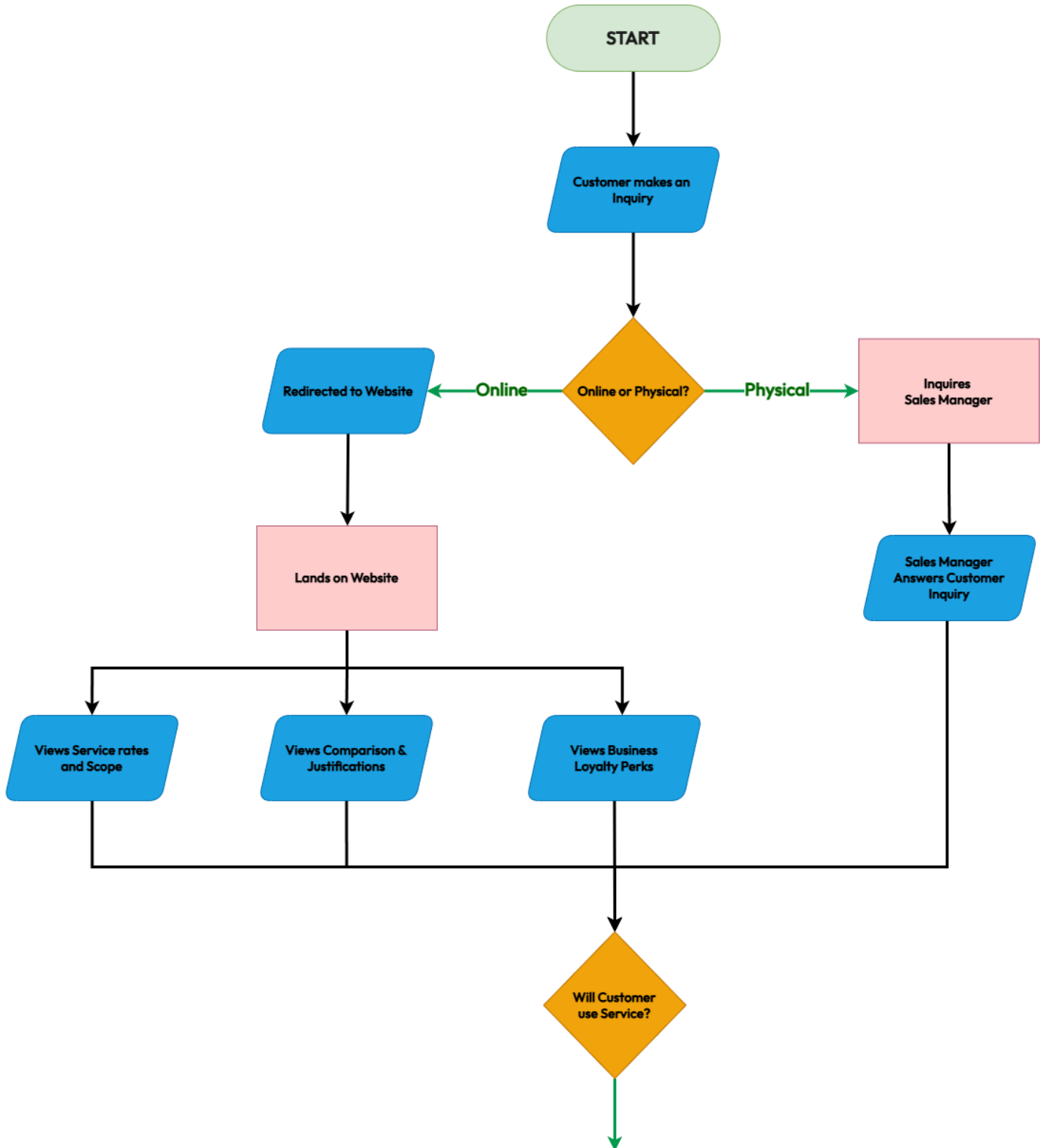


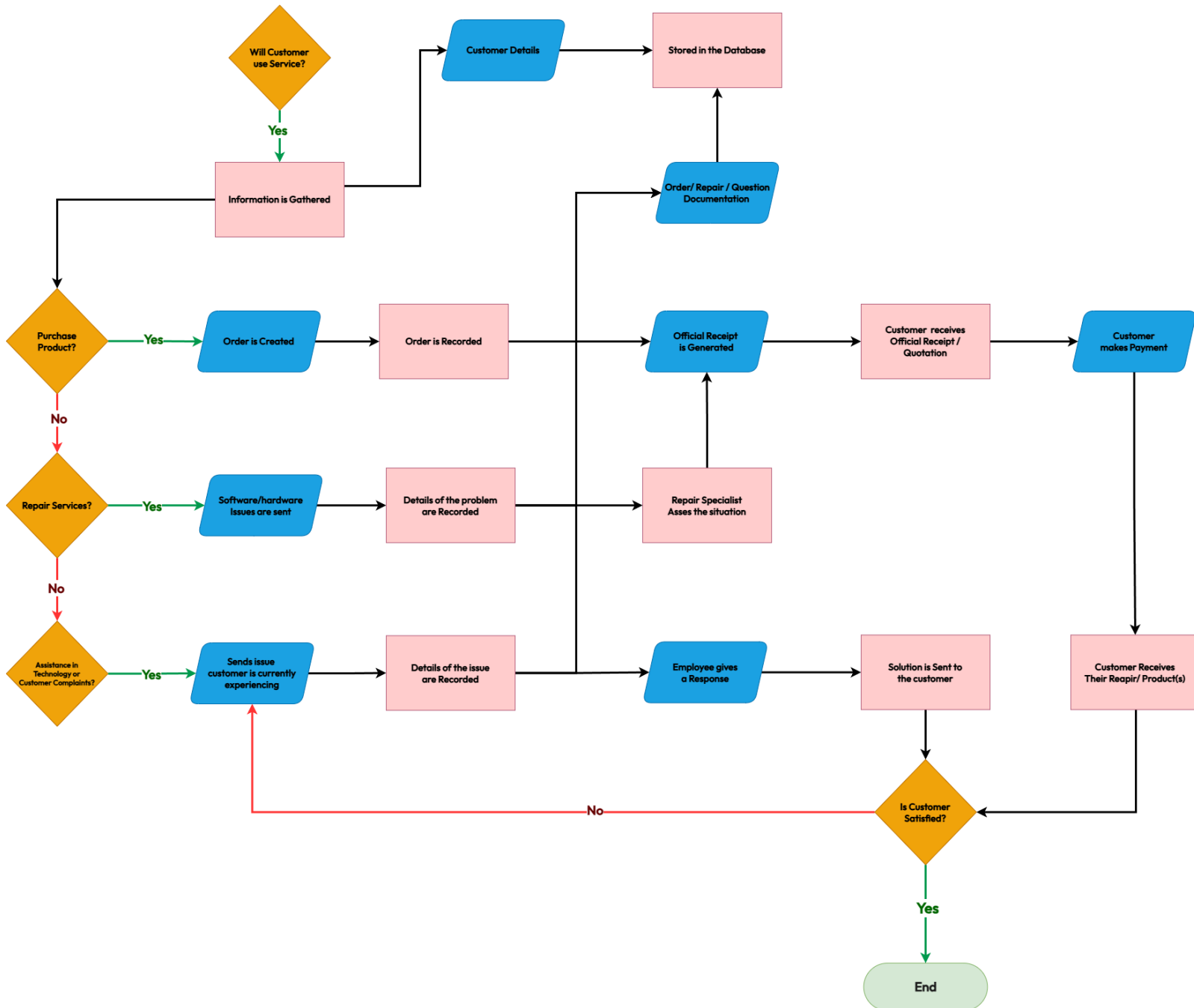


Detailed flowchart of the proposed system or process.

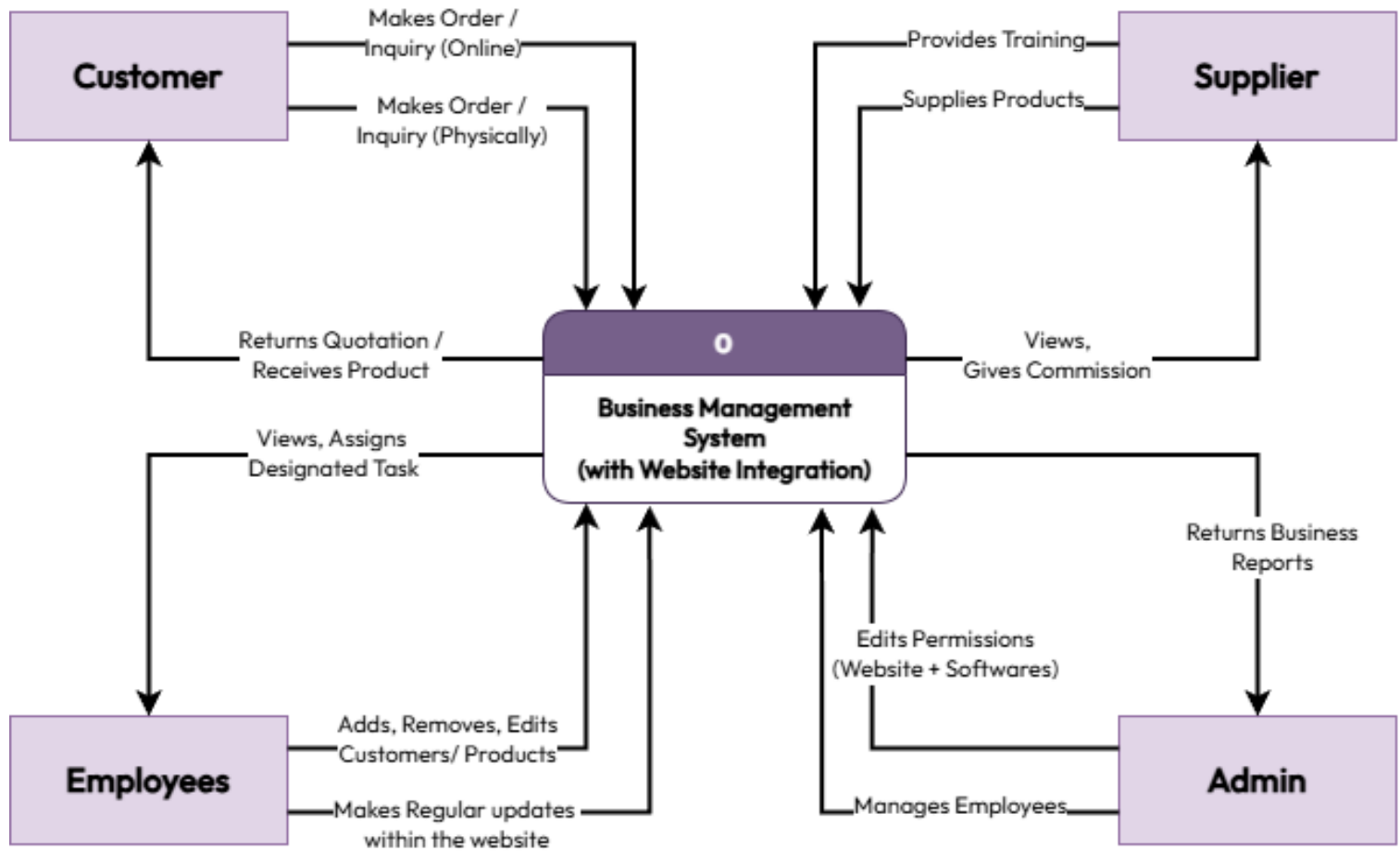


Flow Chart
(Zoomed In)

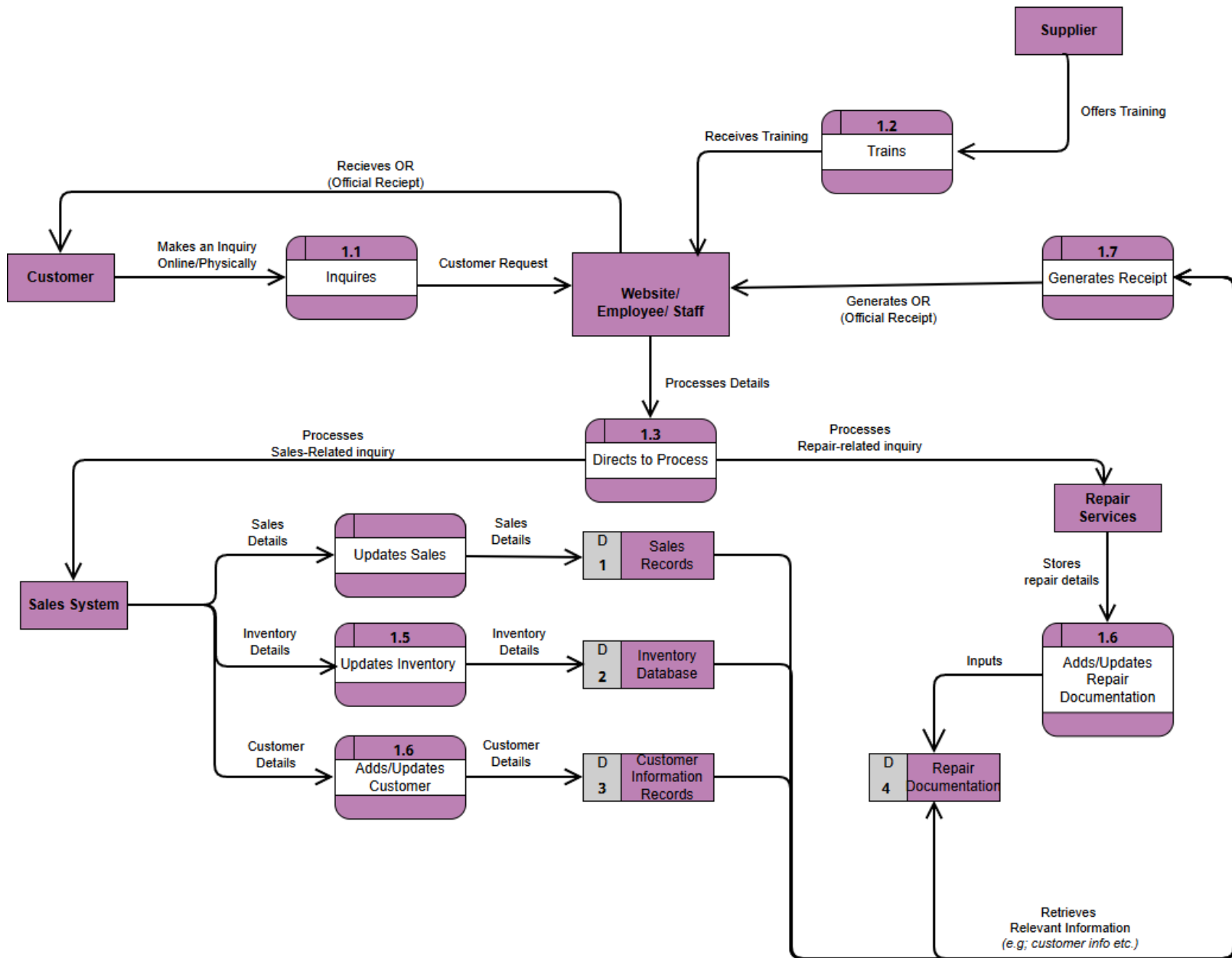




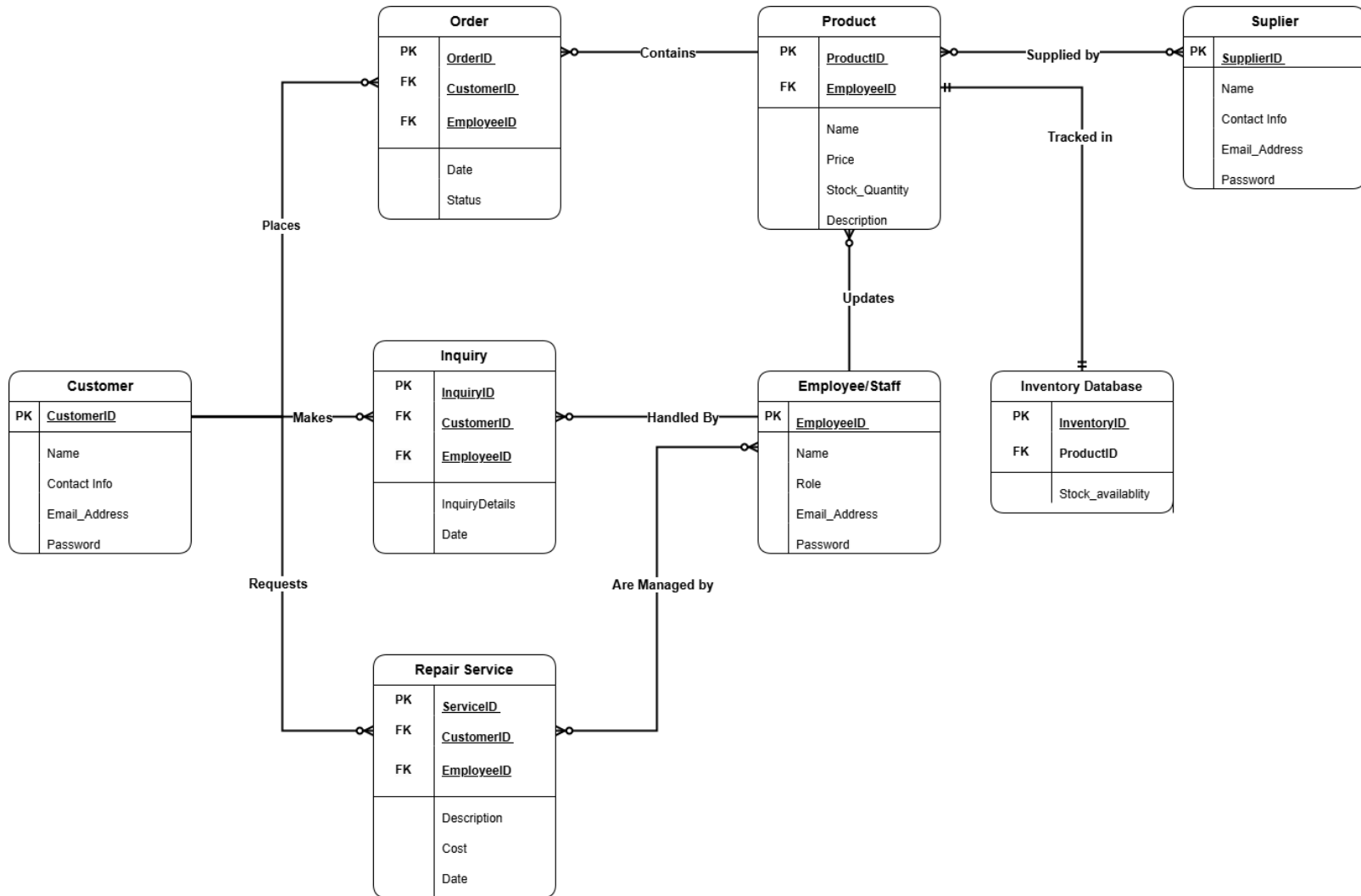
Proposed Context Level DFD



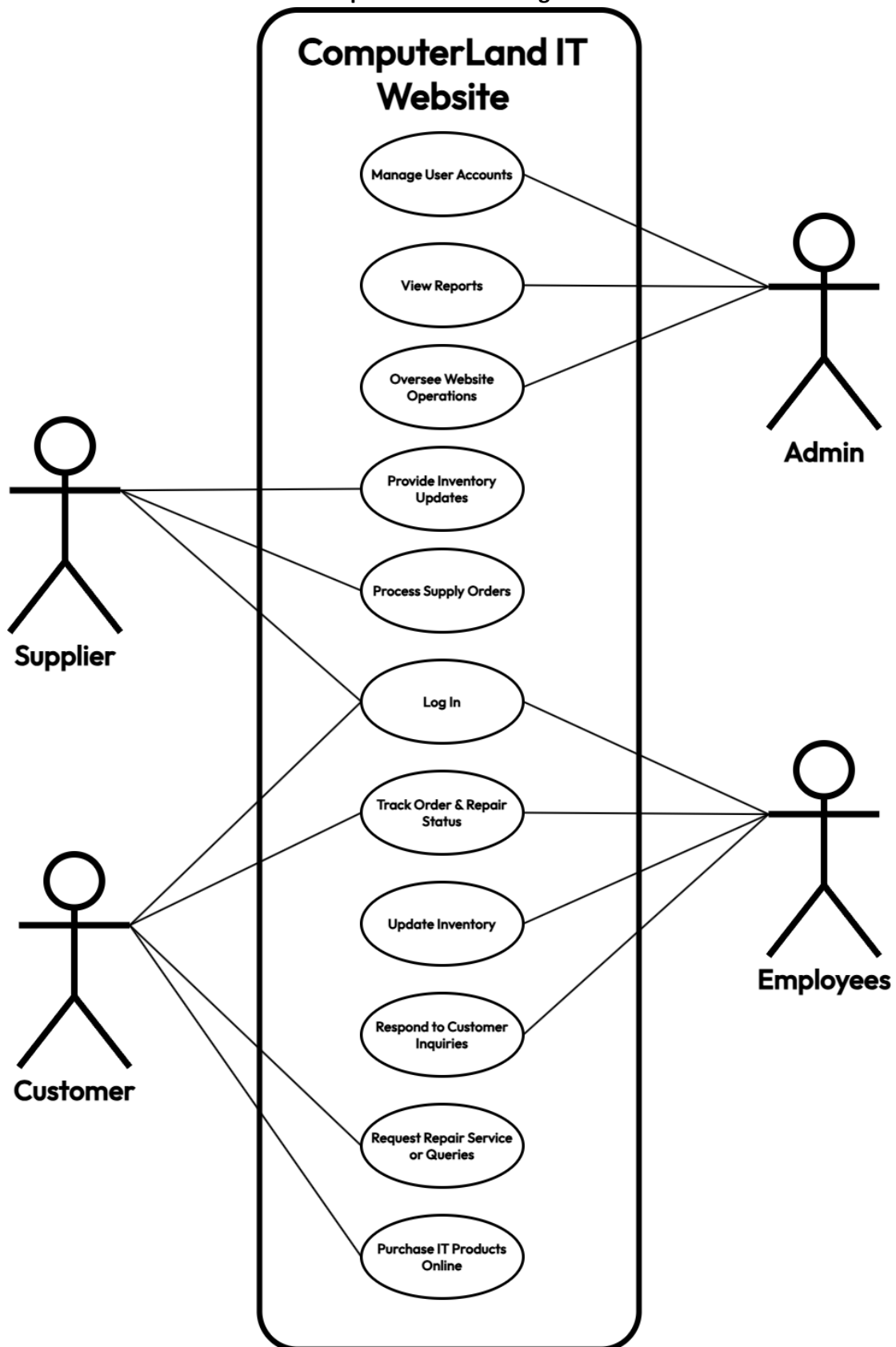
Proposed Level 1 Diagram



Proposed ER Diagram (Crow's Foot)

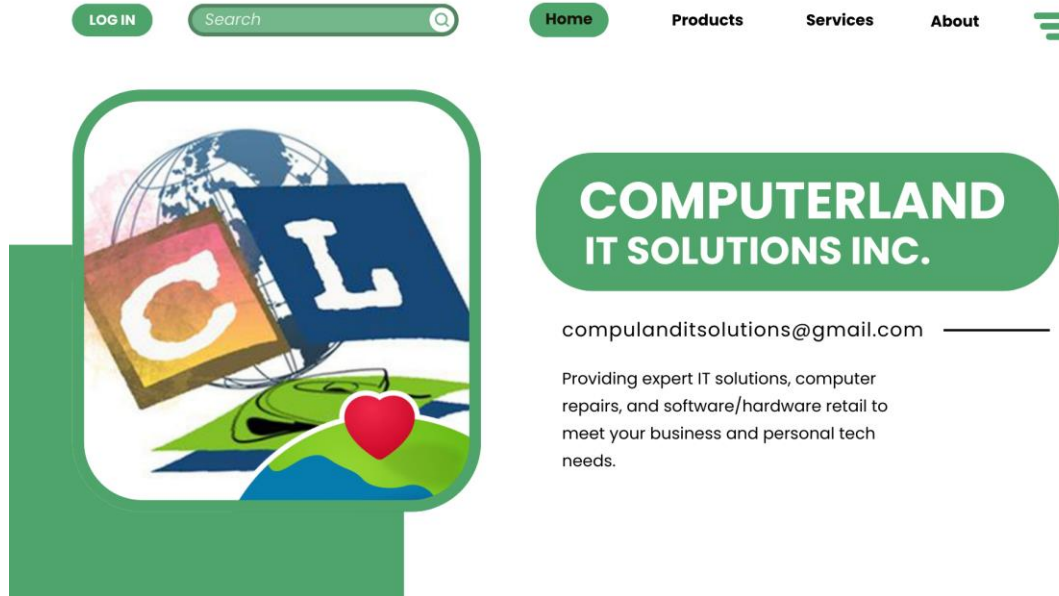


Proposed Use Case Diagram



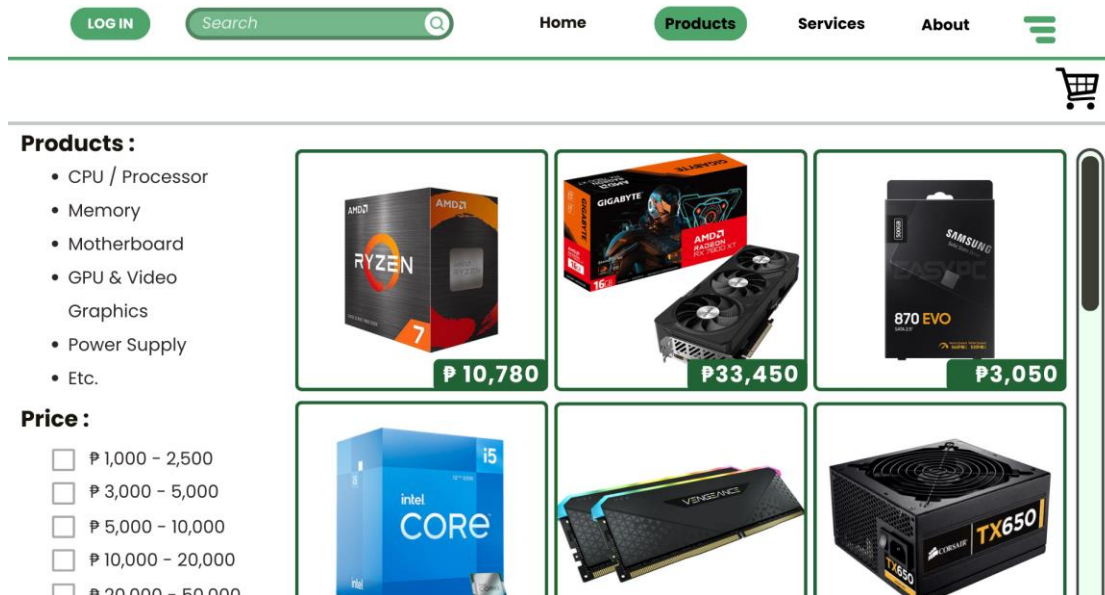
Wireframe of the Proposed System

Landing Page



The landing page of the proposed Website, customers get a brief introduction about Computerland IT Solutions.

Products Page



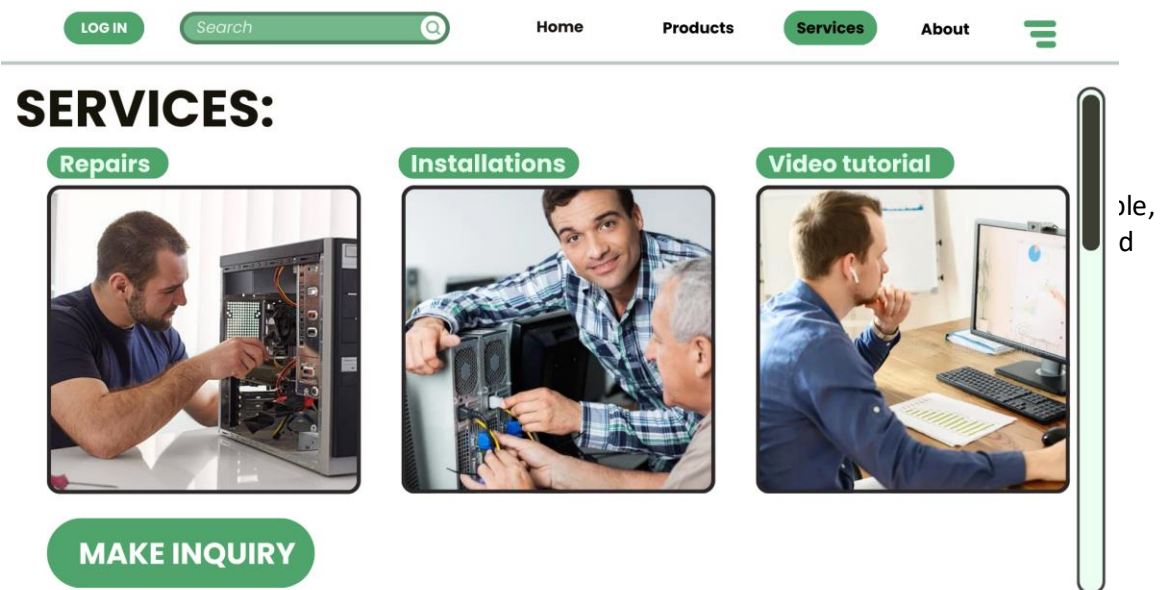
Products page, where customers can see products being sold, filters are also available for better navigation

Products Page (Price Justification)

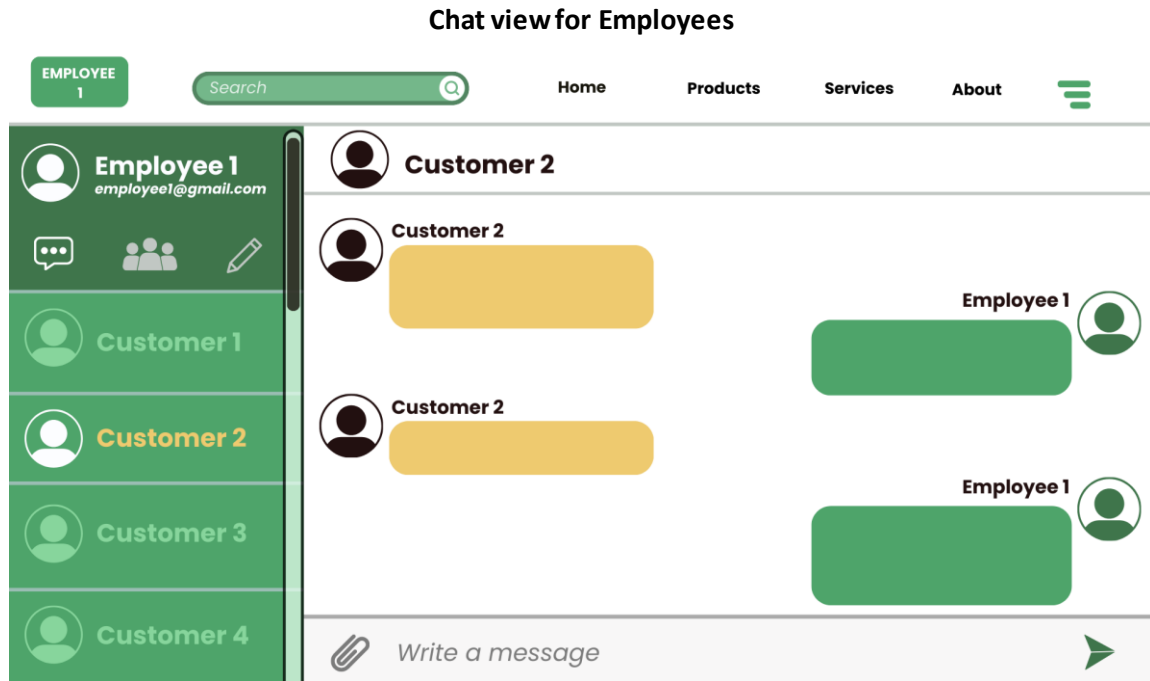


Justification why Customers should choose our services compared to other online stores.

Services Page

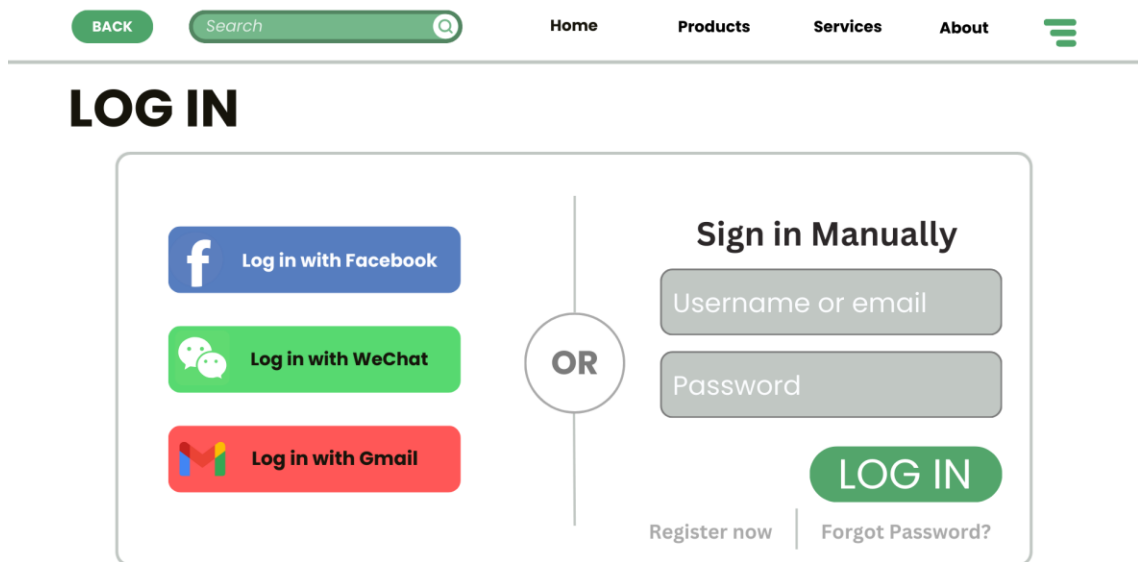


Services page, where customers can see what other Operations the Business offers. Here as well is where customers can make inquiries.



A feature where employees receive customer requests, questions etc.

Login page



Login feature for customers, allows other options for account creation.

Documentation

- Business Name: Computerland IT Solutions Inc
- Business Owner Name: Sheena Choi
- Business Address: CMS Building, 339 McArthur Hi-Way, Brgy. Ninoy Aquino, Angeles City
- Business Contact Number: 0932 647 7310
- Business Email Address: compulanditsolutions@gmail.com
- Name of the Supervisor or Manager: Eric S. Francisco
- Contact Number: 0932 647 7310
- Email Address: compulanditsolutions@gmail.com

Photos:

Picture in front of the office or store :



Picture with the owner and/or manager:



Picture while conducting the interview or data gathering:



Interview Transcript

1. How does the business generally accommodate customers?

Answer:

As part of our business practice, we ensure that customers are welcomed in a friendly and professional manner. Our staff is always ready to assist clients by addressing their inquiries, understanding their needs, and providing the necessary services and products efficiently.

2. How do you handle receipts for product purchases? Is it a manual or automated process?

Answer:

We have two methods for processing customer inquiries related to purchases.
Sales: Our product inventory is system-based, allowing for seamless transactions.
Repair Services: We manually provide service orders that require personal details such as name, contact information, email address, physical address, and client signature. We also document unit details, including reported issues, visible damages (e.g., broken LCD screens, dents), and the customer's specific needs. Additionally, we conduct an initial physical assessment of the unit. This documentation helps us maintain records in case the client returns after a month with follow-up concerns.

3. How does the business interact with sales?

Answer:

As a small business operating within a limited space, we manage our sales through a system where product availability and logistics are updated. We also utilize various communication channels such as Viber, Messenger, text messages, and face-to-face interactions to accommodate customer orders and inquiries.

4. How is business data stored? Do you have a dedicated database?

Answer:

We primarily use Microsoft Excel for data management, and we store records online through Google Sheets to ensure accessibility and security.

5. Do you use any older operating systems for hardware or software?

Answer:

Yes, we still use Windows 7 for our inventory system, and we have not yet updated to a newer operating system.

Problems and Challenges

1. What are the common challenges faced by the business?

Answer:

One of the main challenges is competition in sales. We face tough competition not only from physical stores in our area but also from online platforms such as Shopee, Lazada, and Facebook Marketplace. Many customers enter our store with pre-determined price expectations based on online listings, which often appear cheaper than our physical store prices. This makes it essential for us to justify the value of our products and services.

2. How do you address the challenge of online products being cheaper than physical store prices?

Answer:

Our approach is to focus on product quality and customer service rather than engaging in price wars. The products we offer are tested and trusted, ensuring reliability. Additionally, we provide expert guidance and after-sales support, which online stores typically lack. We also inquired with suppliers about online price differences and learned that e-commerce platforms often have advertisement deals that allow them to lower prices artificially.

3. What are the most common customer complaints in recent years?

Answer:

The most frequent complaint is the pricing difference between our store and online platforms. We take the time to explain why physical store prices are sometimes higher, emphasizing product quality, warranty, and immediate support. Additionally, we handle service-related complaints, including repair times and follow-up services, by ensuring transparency and customer education.

4. Have there been any system failures or data losses in recent years?

Answer:

To date, we have not encountered any major system failures or data losses. Despite using older software, we take precautionary measures to back up our data and ensure recovery options are available in case of hardware or system issues.

5. How do you train employees to handle customer inquiries?

Answer:

We conduct regular meetings to discuss sales strategies and customer service improvements. New employees receive specific training on product knowledge, customer handling, and sales techniques. Additionally, our suppliers support us by organizing product launch events, which we attend to stay updated on new technologies. This enables us to effectively communicate the advantages of new products to customers. Continuous learning is essential, as technology evolves rapidly, and we strive to stay ahead of industry trends.