

CEN207 Assessment 1 - OneStop Case Study

David Lawler - A00075945

David.Lawler@mds.torrens.edu.au

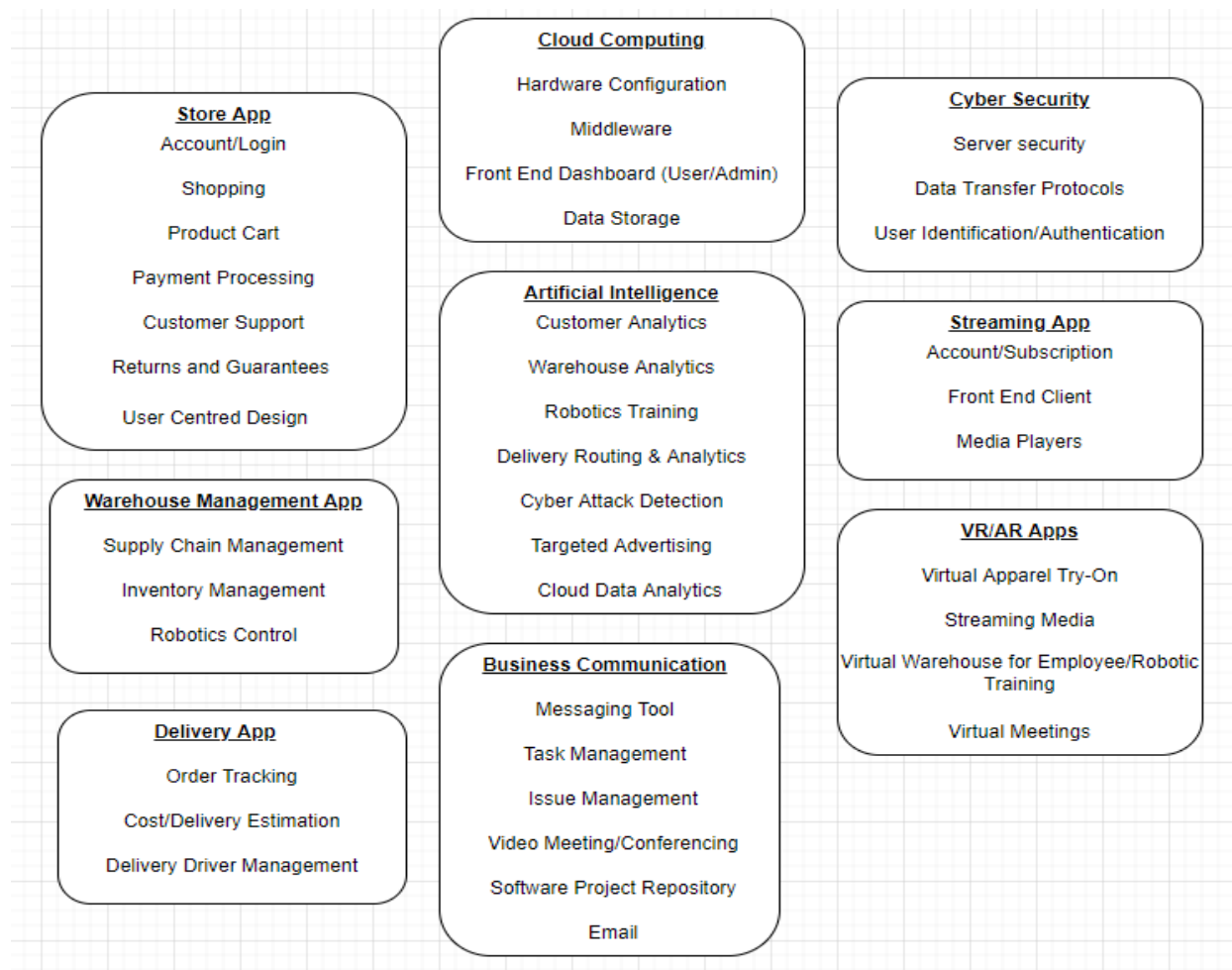
The OneStop Organisation

OneStop is an international e-commerce startup that sells products to firms and individuals online via website and application.

OneStop is going to have to implement software solutions to address four interconnected areas; improving the user experience, venturing into other technology domains, securing digital assets, and providing collaboration software.

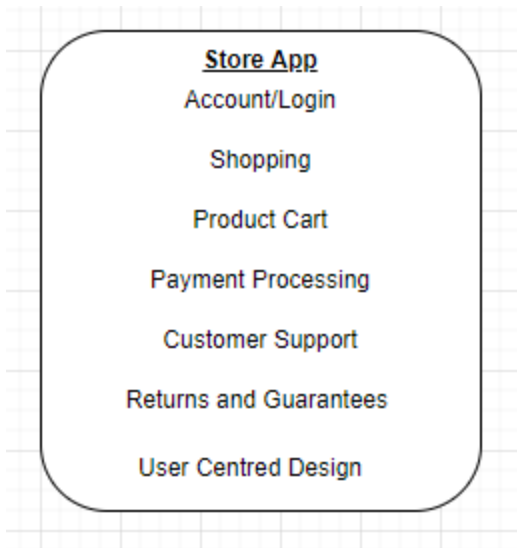
This firm stands to compete against big tech companies, for example Amazon in America, and Alibaba in China. In order to compete in such competitive markets, closing the gap between existing firms and OneStop's technology will not be enough; they will need to be incredibly innovative.

Software Architecture Overview



*All development subject to financial cost-profit analysis

The Store Application



The Store Application is where users browse and make purchases. Composed of front end UIs and backend databases, this is the face of OneStop's online retail business.

Product Details

All products listed need to have a sufficient details section and a link to the product seller's website.

Customer Service Implementation

A three-tiered customer support system should be used to assist customers. An AI based chatbot for common questions, a web forum with more detailed questions and answers, and a live team for phone and email support.

Image and Product Disparity

Every product listed on OneStop should pass a comparison test of product and photos. OneStop should implement standard technical image file requirements for products and provide zoomable photos for certain products like apparel.(Amazon Seller Central, 2022)



Competition

In order to retain customers, OneStop should take advantage of memberships and loyalty programs. To obtain new visitors, OneStop should consider targeted advertising through social media, shown using Naive estimation to be at least 300% more effective than traditional advertising(Farahat & Bailey, 2011).

Account Creation

In addition to standard email and user detail based account creation, a really effective way to reduce account creation time is using the Google Authentication API to allow users who have a google account to seamlessly create an account with another website(Google Identity, 2022).

The Checkout Process

User's Carts should be saved using cookies/cache. It is important that OneStop uses industry standards to create an intuitive and streamlined user experience. OneStop's payment methods should include a combination of Paypal, Amazon Pay, Google Pay, Apple Pay, and a cryptocurrency payment API like Coinbase(HostGator, 2021).

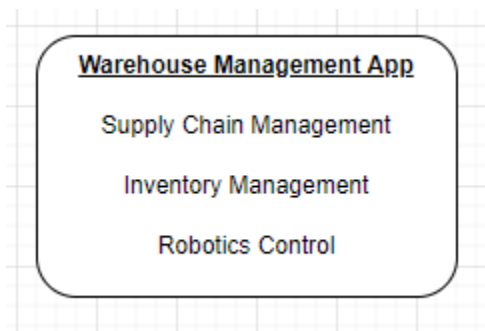
The User Experience

The Website and Application user experience should be designed with human-centred design principles; increase intuitivity, reduce cognitive load, cater for different user cultures, backgrounds and disabilities.(Lowdermilk, 2013)

Policies

Return policies need to vary based on item. Furniture might have a 365 day return policy, while stationary may have a 30 day exchange policy. Guarantees based on faulty products should require photograph or video evidence and issued with a complete refund of product and shipping costs.

The Warehouse Management System



The Warehouse Management System stores and tracks data throughout the e-commerce supply chain; suppliers, storage, and dispatch.

Supply Chain Optimisation

In order to reduce delivery times to a competitive level, producer's should be contractually accountable for up to X amount of units per Y time frame. The WMS should provide live demand forecasting to assist producers. Item tracking should commence as early as possible.

Inventory Management

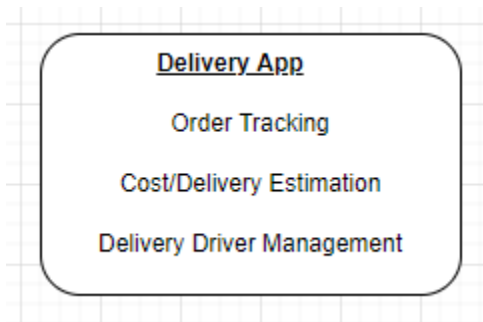
Warehouses should use random item storage techniques similar to Amazon. Items are randomly distributed across the warehouse and their locations are tracked. When an order is to be collected, AI based software works out the quickest route for collection(Tech Insider, 2016).

Robotics Control

Warehouse Robotics, with appropriate low level embedded software, could be used for picking and packing to reduce labour costs and inaccuracies(Warehouse Robotics and WMS Software, 2022).



The Delivery Application



The Delivery Application provides live order tracking and shipping costs for customers. It also assigns deliveries to OneStop's employees and contractors.

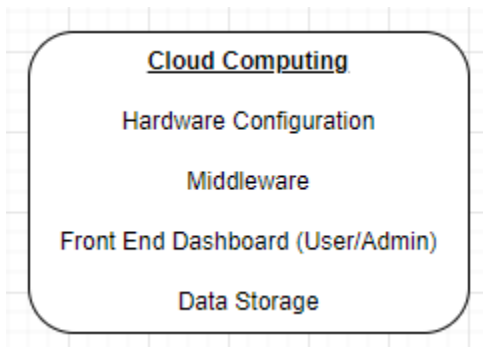
Delivery Management

To achieve competitive delivery times, and options to expedite user's deliveries while minimising costs. OneStop's delivery employees should handle a standard daily amount of deliveries, and delivery services and contractors (similar to rideshare/food delivery applications) recruited for jobs via a OneStop delivery application for expedited deliveries and overflow demand.

Order Tracking

In conjunction with the WMS, live tracking should be available on all orders.

Cloud Computing Service



OneStop proposes to use cloud computing services.

Provides the benefits:

- Fast scalability
- Uptime
- Reduced Hardware and Employee Costs

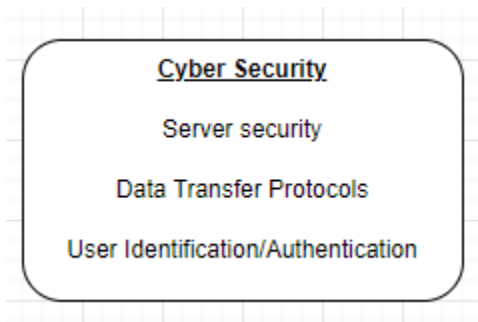
And disadvantages:

- Migration Costs
- Fees
- New software learning time

Cloud Migration

The decision to migrate to the cloud should be based on growth, and implementation of a hybrid approach may offer benefits, based on individual application usage volatility. Eventually OneStop may find it feasible to develop its own cloud computing architecture for both its own operations and as a service.

Cyber Security



Cyber security is essential to protect servers, data transfers and user information/access levels.

Server Side Attacks

Use a proxy server to hide users behind its IP Address. Firewalls and API Gateways to control and detect unusual requests used in DDOS and Bot Attacks.

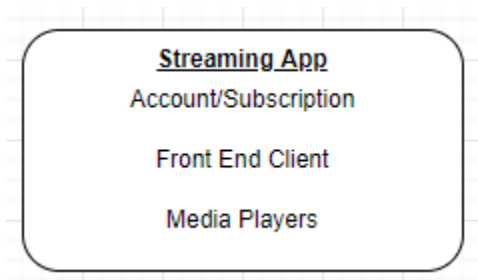
Data Transfer Encryption

Use SSH keys and HTTPS. Employ SSL and TLS encryption.

User Authentication and Authorisation

Use passwords, 2FA, virtual machines for remote users, and token based identification to enforce user access levels.

The Streaming Application



Proposed development of a streaming application to provide digital media entertainment.

Uptime

Streaming services must always be online, to achieve this requires microservice architecture to update modularly and cloud computing for consistency.

Accessibility and Disability Features

The platform will need standard accessibility features like subtitles, font-size and language options, offer a colourblind mode, and warn users sensitive to flashing images.

Business Communications



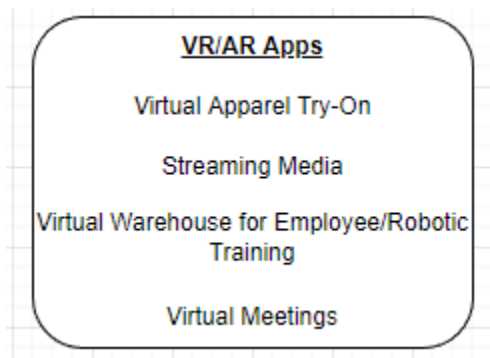
Providing Onestop with communication and collaboration technologies given its international operations.

Office Communication

Advise to use existing Software Development Collaboration, Instant Text Messaging, and Team and Project Management software.



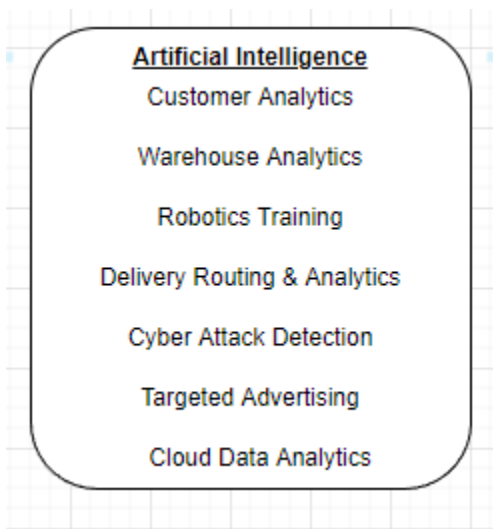
Virtual Reality Application Enhancements



A team should be focused on developing VR components to improve existing systems and services.

- VR Apparel change rooms
- VR movies, games
- VR training spaces
- VR meeting rooms

Artificial Intelligence Application Enhancements



A team should be focused on developing artificially intelligent components and integrating them into existing systems including:

- Customer Analytics for key metrics like visitor conversion and cart abandonment rates
- Warehouse Analytics for optimisation of procedure, supply chain predictions
- Using machine learning for robotics training
- Smart CyberSecurity - detecting middle man attacks etc
- Targeted advertising.

Conclusion

Through a thorough analysis of the OneStop case study, this report provides an overview of the organisation's current and proposed domains. By identifying OneStop's current issues, real-world market gaps and potentially feasible new technologies, I was able to take a modular approach to suggest and evaluate business and software solutions, and enhance them using feasible, current technologies.

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