Fall 2025

Software Requirements Specification

HobbySwap - Group 1

Team members:

Aaron Ngo

Angela Marie Tagudin Chua

Jackey Zhou

Minh Thu Lu

Trung Kien Phan

PRJ566NCC

https://github.com/Zylz8/PRJ566\_Group1\_NCC.git

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Executive Summary

# Background

# Description

## Company Value Add

## End-User Value Add

# Scope

## What is Included

## What is Not Included

# Justification

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Section 1

# Document Authors

Angela Chua, Minh Thu Lu, Aaron Ngo, Jackey Zhou, Trung Kien Phan

# 1.2 Document Revision History

|  |  |  |
| --- | --- | --- |
| **WEEK** | **DATE** | **Revisions** |
| 1 | Sept 18, 2025 | * Section #1 * Section #2.1 |
| 2 | Sept 24, 2025 | * Section #2.1 Revised * Section #2.2 * Section #2.3 * Section #2.4 * Section #2.5 |
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# Document Purpose

To keep track of software requirements and deliverables for HobbySwap.

# Audience

Project Team, Stakeholders, Investors, etc.

# 1.5 Group Agreement

### Team # 1

### Project Title

HobbySwap

### Project Time Frame

The semester 5 and 6 (not counting co-op)

### Team Members:

* Angela Marie Tagudin Chua
* Jackey Zhou
* Minh Thu Lu
* Trung Kien Phan
* Aaron Ngo

### Team Leadership

Aaron Ngo

### Team Functions/Roles

* Angela Marie Tagudin Chua: Frontend Developer
* Jackey Zhou: Business Analyst
* Minh Thu Lu: UI/UX Designer
* Trung Kien Phan: Backend Developer

### Team Meetings

Every Wednesday at 6pm.

### Team Problems

### Teammates might have different schedules.

### Team Commitment

The undersigned members agree to work together on the project until the end of the PRJ66 next Semester. They recognize that as a team and individually, they are equally responsible for the quality of all deliverables.

|  |  |  |
| --- | --- | --- |
| **Name** | **Date** | **Signature** |
| Angela Chua | Sept 17 2025 | Angela Chua |
| Jackey Zhou | Sept 17, 2025 | Jackey Zhou |
| Aaron Ngo | Sept 17, 2025 | Aaron Ngo |
| Minh Thu Lu | Sept 18,2025 | MTL |
| Phan Trung Kien | Sep 18, 2025 | Kevin |

Section 2

# 2.1 Project Proposal

## 2.1.1 Project Background

With the surge in popularity of collectibles like Pokémon cards and blind boxes (Smiski, Labubu, Sonny Angel), it’s surprising that there isn’t a mainstream platform dedicated to facilitating trades. Collectible trading is fragmented across unsafe platforms (Facebook, eBay, conventions). There is a need for a dedicated, trusted, and user-friendly system to facilitate trades. HobbySwap builds on the insights gained from the PokeSwap prototype, HobbySwap now offers a wider range of collectible categories.

**Current Competitors:**

**Facebook Marketplace:**

Facebook Marketplace provides free local listings that allow the users to buy and sell items within their community *(Facebook, n.d.).* The features of Facebook Marketplace include local search filters, category browsing, built-in messaging through Facebook Messenger, ratings and reviews, and integration with user profiles for transparency. Despite these advantages, Facebook is not optimized for dedicated item-to-item swaps. Most trades are cash-based, and exchanges require informal arrangements between the users, which often leads to miscommunication or disputes. There is no trusted service, shipping protection, or structured system to verify the authenticity of collectibles, leaving collectors at risk of scams or counterfeit items. The completed trades are difficult to track, making it difficult for users to build a reliable reputation within the Marketplace.

**eBay:**  
eBay is one of the largest global e-commerce platforms and a dominant marketplace for collectibles, including trading cards, figurines, and other hobby items *(eBay, n.d.).* Its features include auction-style and fixed-price listings, buyer and seller ratings, global reach, secure payment integration with PayPal, and purchase protection programs that cover certain disputes. eBay's search filters, categories, and item tracking tools make it easy for collectors to find rare or high-value items. However, eBay is heavily cash-based, and while it does do buying and selling, it does not provide a structured item-for-item trading option. Sellers also face high commission fees (generally 10-15%), which can discourage smaller trades of exchanges of low-value collectibles. Also, shipping costs and delays can make casual trading less likeable. While there is buyer protection, disputes are often time-consuming.

**StockX:**

StockX is a trusted online marketplace primarily used for buying and selling sneakers, streetwear, trading cards, electronics and more. *(StockX, n.d.)* One of its advantages is that all products go through StockX’s authentication process, acting as a middleman to verify items before they reach the buyer. StockX uses a bid/ask system where sellers list their asking price, and buyers place bids. This system does not provide a way of offering other collectibles to complete a transaction. Another limitation is the lack of an integrated chat or messaging system, which means users have no way of directly negotiating.

**Conventions:**

Collector conventions (Toronto Card Show, Anime North, or Comic-Con events) provide an in-person environment where buyers, sellers, and traders can meet face-to-face. Their features include direct item inspection, live auctions, vendor booths, and the ability to trade or negotiate in real time. Collectors can verify authenticity and quality of the items before committing to a deal. Conventions also build community by creating an interactive experience where collectors can network with like-minded hobbyists. The downsides are conventions are limited to specific dates and locations, often requiring admission fees and travel costs. Many vendors undervalue items, offering only 70-80% of the market value when buying from collectors.

|  |  |  |  |
| --- | --- | --- | --- |
| **Application** | **Key Features** | **Lack of Features** | **Cons** |
| Ebay | - Global reach  - Auction + fixed pricing  - Buyer protection  - Seller/buyer ratings | - No item-for-item trading  - No direct chat  - High fees | * 10–15% seller fees * No trade options * Time-consuming dispute resolution |
| StockX | - Authentication service  - Bid/Ask pricing system  - Secure transactions | - No chat or negotiation - No item-for-item trading - Only certain categories supported (Mostly clothes, not toy collections) | * No trading, only buying/selling * Not community-focused * Limited product range |
| Facebook Marketplace | - Local listings - Facebook Messenger integration - Free to use | - No item verification - No structured trade system - No transaction protection | * High scams risk * No reputation system * Trades are informal & risky |
| Conventions | - In-person trading  - Live auctions  - Community networking | - Not available year-round  - No digital infrastructure | * Requires travel & fees * Can’t scale beyond events * No trade tracking system |

## 2.1.2 Problem Statement

Collectors today face major challenges when trying to complete or manage their collections. Platforms like Facebook Marketplace, eBay, or conventions are currently the most common methods used for trading and selling collectibles. However, these platforms are not designed for direct item-for-item exchanges and often leave collectors exposed to scams, inflated prices, and unreliable trade partners. For parents and younger collectors, these risks are even more serious as they lack a safe environment to swap or purchase items. Conventions, while they are a safer option, are limited to specific dates, require entry fees, and only provide temporary opportunities to trade. As a result, for the average collector they will either pay high reseller markups or take risks in unregulated online communities.

The lack of a mainstream, trustworthy, and efficient trade system creates inefficiencies that harm both casual and serious collectors. Blind box collectibles such as Labubu and Smiski are intentionally designed against you randomly opening the item you want. Without a safe trade system, those items often go to waste or flood unregulated marketplaces. Similarly, the resurgence of Pokémon cards, some selling for thousands of dollars or even millions, highlights the scale of value being exchanged in unsafe environments. Collectors now need a secure, transparent, trustworthy, and easy-to-use platform that not only connects them to others but also ensure fair trades, prevents scams, and promotes a healthier collector community.

## 2.1.3 Product Vision

To close the gap between serious collectors, sellers, and causal hobbyist, we aim to establish a reliable online marketplace and community platform where collectors can trade collectibles in a fair and secure manner.

HobbySwap introduces key features designed to address the shortcomings of existing solutions:

* Free Listing and Browsing – Users can explore available items at no cost, with filtering and sorting by category
* Flexible Swap Requests – Collectors can post listings requesting specific collectibles, cash, or a combination of both
* Integrated Chat – On-platform messaging allows users to connect, negotiate and confirm trade details
* Affordable & Fair – Users get more value for their items compared to selling to vendors or local stores. Fees only apply for remote trades where shipping protection is required, while local trades remain free.
* Trust and Safety - Securing partnerships with other reputable platforms such as Collectr and TCGPlayer would establish credibility and foster trust in our platform. Users will ship their items to HobbySwap for authentication. Once verified, the platform completes the swap by sending the items to their new owners. Upon completing trades, users will have a chance to rate their trade partner, allowing them to gain reputation over time.

# 2.2 Stakeholders and Users

**Internal:**

|  |  |  |
| --- | --- | --- |
| **Role** | **Name** | **Description** |
| Product Owner | Aaron Ngo | Oversees the overall product vision and ensures alignment with user needs and business goal |
| Frontend Developer | Angela Chua | Responsible for implementing user interface components and ensuring accessibility and responsiveness |
| UI/UX Design | Minh Thu Lu | Design user flows and interfaces to ensure a smooth and intuitive user experience |
| Backend Developer | Trung Kien Phan | Develops APIs, handles data process, user authentication, and implements trade logic |
| Business Analyst | Jackey Zhou | Conducts market research, competitor analysis, and aligns features with user needs |

**External:**

* **Partners**

***Trading cards, toys, blind boxes store***

* They are local hobby shops, anime stores, card retailers, and related businesses that we collaborate with to grow the HobbySwap platform from the ground up. These partnerships can begin with simple, low-barrier collaborations such as putting up posters, distributing flyers, or featuring HobbySwap in-store (e.g., via a QR code, window sticker, or shelf signage).
* In return, we will promote them on HobbySwap's website/app/social media as official trade-friendly locations, driving visibility among local collectors. Stores can advertise their inventory or special promotions directly on the HobbySwap platform, reaching a highly targeted audience of collectors. When having enough amounts of users, they will co-host exclusive in-store or pop-up trade nights with HobbySwap (e.g., Pokémon swap meet, blind box trading party), driving event-specific sales.
* Some research on few stores we will contact: Wheels &Wings Hobbies (located at The Danforth), VTR Gaming (located Mississauga Valley), Emmett’s ToyStop (located Etobicoke), L&M Trading (located downtown Toronto), GameSwap (located Scarborough), etc.

***Content Creators on Social Media***

* Influencers, YouTubers, TikTokers, and Instagram creators who specialize in collectibles, such as Pokémon cards, anime merchandise, blind boxes, or toy unboxings, are key promotional partners for HobbySwap. These individuals have direct influence over niche audiences who already trust their opinions and follow their collecting habits.
* We aim to collaborate with content creators by offering them early access to the platform, exclusive trading features, or opportunities to host giveaways, unboxings, or trade challenges sponsored by HobbySwap. In exchange, they’ll help us build hype, educate their followers about how to use the app, and generate trust and interest through authentic content.
* This collaboration can start simply through a sponsored post, but can grow into long-term ambassador roles, where creators host virtual or in-person swap events, or become featured collectors on the platform.
* Some popular accounts: [PokeRev](https://www.youtube.com/@PokeRev) (3.13M subscribers), [WolfeyVGC](https://www.youtube.com/channel/UC9OZkS1Mhl5UvKSiPrYqsxg/videos) (1.9M subscribers), [DeepPocketMonster](https://www.youtube.com/@deeppocketmonster) (1.8M subscribers), [shofu](https://www.youtube.com/channel/UCbr6TI0Mujw2iFAQE4R8yrQ/) (167k subscribers)
* **Investors**
  + Investors are individuals or firms who provide the funding needed to support the development and growth of the HobbySwap platform. This early financial support helps us build new features, expand our marketing reach, and scale our user base. While their input may help shape certain business strategies, investors are not intended to be the driving voice behind the platform’s vision or community direction.
  + In return, investors benefit from holding equity in HobbySwap, meaning they share in the company’s success as it grows in popularity and value. As the platform scales, investors may see returns through profit shares, future acquisition opportunities, or the increased value of their ownership stake.
  + We plan to connect with investors through startup events, pitch competitions, angel networks, and crowdfunding platform.
* **Users:**

***Collectors:***

* Users, primarily collectors of trading cards, toys, blind boxes, and other hobby items, are the heart of the HobbySwap platform. They use the service to discover, trade, and connect with other enthusiasts in a safe and trusted environment. Their active participation drives the community and keeps the marketplace vibrant.
* Users benefit from an easy-to-use platform designed specifically for item-for-item trades, secure messaging, trade tracking, and reputation building. Their feedback and trading habits are crucial for improving HobbySwap and expanding its features.
* We will engage users through targeted marketing, partnerships with stores and influencers, and by fostering an active community where collectors feel valued and supported.

***Business:***

* Business accounts represent local hobby shops, resellers, and traders who use HobbySwap to showcase their inventory, reach a broader audience, and facilitate trades or sales with collectors and other businesses. They gain access to promotional opportunities, inventory advertising, and tools to manage trades efficiently. By joining the platform, businesses can expand beyond physical locations, participate in community events, and build a loyal customer base within the collector ecosystem.

# 2.3 Project Scope

**What are included:**

* Creating a suitable back-end to store user and product data, and a suitable front-end to show this data.
* Choosing what libraries to use (React-based, Express-based, etc.), in addition to choosing on how to style the front-end (custom CSS, or a pre-set library like Bootstrap or Tailwind)
* As it involves storing user data, a back-end module that encrypts sensitive data must be included (i.e. bcrypt if based on Node).
* Must exchange of goods between users. Users need to communicate with other when exchanging, so a chat system must also be made. This chat system should also monitor messages for unauthorized activity (i.e. scams, illegal activities, etc.).
* A moderation system should be included in the site to protect against bad-faith actors, for instance, reporting a user if they are showing obscene content, or if they are promoting un-authorized services outside of the site.
* This project primarily involves trading collectables like trading cards, blind boxes, etc. A guideline that focuses on what should be hosted on the site should therefore be included.

**Out of Scope:**

* Forums: while collecting can be community based, our website is specifically focused on the trading experience itself.
* Native Mobile App (iOs/Android): We will focus on responsive web platform first to reduce complexity
* Auctions/ bidding system: focus on item-for-item trade focus, this will be future development.
* Cross-platform Integration: focus on within the application for now, will not sync with Ebay, Amazon, or other marketplaces. What risk from previous features?
* Cloud-based website

# 2.4 System Risks

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Risk** | **Project Relevance** | **Likelihood** | **Impact** | **Risk Level** | **Mitigation Strategy** |
| Users Scams/ Fake Profile | Trust is essential to building a strong user base. Without an effective verification system, or close monitoring, users are unlikely to feel safe on the platform, hindering engagement. | High | High | Critical | Add identity verification, limit unverified user actions, build reputation system |
| Low adoption/Engagement | HobbySwap’s success depends on cultivating a large, active community. Since the platform acts as an intermediary, user activity directly determines its usefulness. | Medium | High | High | Market to niche communities (ex. Facebook group, and influencer promote on social media)  Run early beta testing |
| Data Loss | The platform stores important information such as user accounts, listings, trade history, and messages. Losing data would damage user trust, disrupt operations, and make it difficult for collectors to rely on our platform | Low | High | Critical | Use the 3, 2, 1 method when storing data (3 places data is stored, 2 in different devices, 1 off-site), always make back-ups |
| Fraud/Counterfeit Items | Fraud incidents could significantly damage user trust. Even if HobbySwap is not directly liable, collectors may hold us responsible, discouraging others from using it. | Medium | High | High | Have users send collectibles to HobbySwap for verification before they’re shipped to their new owners. If items are mismatched with trade details, they will be sent back. |
| Users Canceling Trades After Agreement | Two users may agree to a trade, but one cancels before the exchange happens. This scenario is demoralizing to the other user, wastes their time, and reduces trust in the platform if it often occurs. | Medium | Medium | Medium | Allow users a 2-hour window to cancel after confirming a trade. Enforce a strict policy on frequent cancellations by limiting the number allowed per month. Frequent cancellations directly affect reputation system. |
| Product is missing in the DB | Incomplete product data hurts usability and could affect adoption if users can’t find what they’re looking for. | Medium | Low | Low | Periodically update the database with new products |
| Shipping Delays/Cancellations | Our users might want to remotely trade with each other, however unexpected shipping delays and cancellations might occur during the process. | Medium | High | Medium | Notify the users of possible shipping disruptions in advance. Provide alternatives if their shipping method of choice isn’t available. |

# 2.5 Operating Environment

The HobbySwap application functions as a Progressive Web App and as a standalone mobile app for Chrome, Safari, Firefox, and Edge on Mac, Windows, and Android devices. Frontend development is done through React, Next.js, and TypeScript, while packaging is done using Node.js 20+ and is streamed over HTTPS. The app track inventory and track slow-moving stock on consignment and allocate swap stock for in-store swap events. Event trade nights and track participants with swap volumes. The app integrates swap workflows, manage catalogs, and distribute leads to stores.

* Hardware Environment:

- Scalable Services: Ensuring servers can handle peak loads

- Reliable Hardware: Using high-performance, dependable hardware

- Network Redundancy: Implementing stable, uninterrupted network connections

* Software Environment:

- Stable OS: Using reliable operating systems for all devices

- Database Integration: Seamlessly integrating with leading database systems

- API Integration: Maintaining APIs for software integration

- Continuous Deployment: Rapidly deploying new features

* Security Environment:

-Advanced Security Protocols: Implementing end to end encryption

- Threat Monitoring: Utilizing real-time threat detection

- Security Audits: Conducting regular vulnerability assessments.

- Data Encryption: Protecting data in transit and at rest

# 2.6 Functional Requirements

# 2.7 Nonfunctional Requirements

# 2.8 UI/UX Interface Mock-ups

Section 3

# 3.1 Data Flow Diagrams

# 3.2 User Stories and related Use Case Scenarios

# 3.3 Activity Diagrams

# 3.4 Business Rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Business Rule #** | **Description** | **Activity Diagram** | **Related UCS** | **UI**  **Mock-up** |
| BR1 |  | AD1 | UC1 | UI 2.7.2 |
| BR2 |  | AD2 | UC2 | UI 2.7.3 |
| BR3 |  | AD3 | UC3 | UI 2.7.4 |
| BR4 |  | AD3 | UC3 | UI 2.7.4 |
| BR5 |  | AD5 | UC4 | UI 2.7.6 |
| BR6 |  | AD6 | UC5 | UI 2.7.6 |
| BR7 |  | AD7 | UC6 | UI 2.7.7 |
| BR8 |  | AD8 | UC7 | UI 2.7.8 |
| BR9 |  | AD8 | UC7 | UI 2.7.8 |
| BR10 |  | AD8 | UC7 | UI 2.7.8 |
| BR11 |  | AD8 | UC7 | UI 2.7.8 |
| BR12 |  | AD8 | UC7 | UI 2.7.8 |
| BR13 |  | AD9 | UC8 | UI 2.7.9 |
| BR14 |  | AD9 | UC8 | UI 2.7.9 |
| BR15 |  | AD9 | UC8 | UI 2.7.9 |
| BR16 |  | AD9 | UC8 | UI 2.7.9 |
| BR17 |  | AD10 | AD9 | UI 2.7.9 |
| BR18 |  | AD10 | AD9 | UI 2.7.9 |
| BR19 |  | AD10 | AD9 | UI 2.7.9 |
| BR20 |  | AD11 | UC10 | UI 2.7.10 |
| BR21 |  | AD11 | UC10 | UI 2.7.11 |
| BR22 |  | AD11 | UC10 | UI 2.7.11 |
| BR23 |  | AD12 | UC11 | UI 2.7.10 |
| BR24 |  | AD13 | UC12 | UI 2.7.12 |

Section 4 – Domain Class

Section 5 – Database

Section 6 – Project Management

# 6.1 Work Breakdown Structure

# 6.2 Milestones & Acceptance Criteria

Section 7 – Product Backlog & Implementation Schedule

Section 8 – Client/Faculty Sign-off

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