**SylvieVerse: A Dual-Mode Auction and E-Commerce Platform for Manhwa Enthusiasts**

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Abstract

# Contents

[Contents 2](#_Toc208665499)

[2 Introduction 2](#_Toc208665500)

[2.1 Background 2](#_Toc208665501)

[2.2 Aims and objectives 3](#_Toc208665502)

[2.3 Approach 4](#_Toc208665503)

[3 Literature Review 5](#_Toc208665504)

[3.1 Approach to literature searching 5](#_Toc208665505)

[3.2 Identifying the problem 5](#_Toc208665506)

[3.3 Conclusions 8](#_Toc208665507)

[4 Product Research 9](#_Toc208665508)

[5 Product Research for SylvieVerse 9](#_Toc208665509)

[6 Comparative Analysis Table 9](#_Toc208665510)

[7 Detailed Platform Reviews 11](#_Toc208665511)

[8 Legal, Social, Ethical and Professional Issues and Considerations 12](#_Toc208665512)

[9 Requirements 12](#_Toc208665513)

[10 Design 14](#_Toc208665514)

[11 Prototype 14](#_Toc208665515)

[11.1 Review of technology 14](#_Toc208665516)

[12 Reflection 15](#_Toc208665517)

[13 Bibliography 15](#_Toc208665518)

[14 Appendices 15](#_Toc208665519)

# Introduction

## Background

The spread of online auctions has altered the way of trading in uniquenesses; however, there are unresolved problems related to purchasing manga and manhwa on online auction sites. E-Bay and Etsy represent a portfolio of generic services in which there are no special systems to verify rare editions, secure peer-to-peer transactions, or support the premise of forming groups of contestants that can call on collectors to form a group. This functionality to feature disjuncture makes ardent users move through pieced together ecosystems hence impacting on transactional security as well as the general user experience.

The manga/manhwa market shows a strong growth with an annual growth rate of 18.7% up to the year 2030. This growth can be triggered by the fact that there is a growing consumption of Asian comics throughout the world also driven by anime adaptations and digital channels. Although this has occurred, the secondary market of tangible collectibles is still in its infancy, more so in the west whereby there is a noticeable limitation of availability of rare collectibles.

Specialized-trading platforms like MyFigureCollection give an example of necessity of the specialized trading environment, though, in most cases show more focus on the community-like features which negatively impact the security of the transaction. SylvieVerse brings in this unbalanced element by balancing social engagement tools with the strong commercial infrastructure. It has architecture-in-built verification of protocols such as rating of sellers, transaction records, and optional attestation of identities to reduce common frauds. Cleowness of the auction process and moderation by the community also make the site more believable.

Major weaknesses in terms of security are a major industry hurdle, as gatherers are often exposed to fake auctions and unauthorized bill payments. SylvieVerse filters these attacks by developing multi-level verification methods and maintaining the accessibility by providing multilingual user interfaces (English, Japanese, Korean) and adapting to WCAG 2.1 criteria. This combined strategy places the platform as one that will revolutionize the process of trading of collectibles to a growing base of users.

## Aims and objectives

The primary aim of SylvieVerse is to establish a secure, specialized marketplace addressing the unique requirements of manhwa and manga collectors. This objective will be realized through four interconnected goals:

(1) developing a dual-mode architecture supporting administrator commerce and peer-to-peer auctions;

(2) implementing multi-layered security and verification protocols;

(3) integrating community engagement features to foster user interaction;

(4) ensuring compliance with international accessibility and data protection standards. Success metrics include user adoption rates, transaction volume stability, and qualitative feedback from the collector community, with platform evolution guided by continuous user experience analysis.

## Approach

SylvieVerse employs the Dynamic Systems Development Method (DSDM), an agile framework selected for its capacity to manage complex requirements through iterative, time-constrained development cycles. This methodology facilitates systematic prioritization via the MoSCoW technique, ensuring core functionalities—secure authentication, auction systems, and payment processing—are delivered before secondary features. Fortnightly feedback sessions with 5–10 target users validate prototype efficacy, allowing real-time refinement of auction mechanics and interface design

## Justification of the suitability of a Methodology or a Framework followed.

The development of SylvieVerse, a dual-mode auction and e-commerce platform tailored for manhwa and manga enthusiasts, necessitates a robust methodology and framework to address its complex requirements, including secure transactions, real-time bidding, and community engagement. The Dynamic Systems Development Method (DSDM) was chosen as the agile methodology, paired with the Laravel PHP framework, due to their complementary strengths in facilitating iterative development, ensuring scalability, and delivering a user-centric platform. This section justifies their suitability by examining their alignment with the project’s technical, functional, and user-driven objectives, supported by evidence from academic research and industry practices.

# Literature Review

## Approach to literature searching

To gather information for this review, I started by using reliable online databases like Google Scholar, JSTOR, and IEEE Xplore for academic articles. I also looked at reports from trusted organizations such as Grand View Research and Statista for market data. My search terms included "manga market growth 2025," "online auction challenges for collectibles," "niche e-commerce platforms," "ethical issues in digital marketplaces," "DSDM in software development," and "Laravel for e-commerce systems." I focused on sources from the last five years (2020-2025) to keep things current, and I checked over 50 items, picking only those from peer-reviewed journals, reputable reports, and well-known conferences. I made sure to include a mix of viewpoints, like business reports for numbers and academic papers for deeper ideas, to avoid bias. This helped me build a clear picture of the topics without getting overwhelmed.

## Identifying the problem

Fans of manga and manhwa have a hard time buying and selling stuff online. Big sites don't have special tools for checking if items are real or for chatting with other fans, so people end up using many places and risk getting tricked. Reports show the market is growing fast, but without better sites, fans miss out on safe trades and fun talks.

## Manga and Manhwa Market Dynamics

The manga and manhwa industry is growing fast because more people around the world are getting interested in these comics from Japan and Korea. According to a report by Grand View Research, the global manga market was worth about $15.6 billion in 2024 and is expected to reach $42.5 billion by 2030, growing at a rate of 18.7% each year. This boom comes from things like popular anime shows on streaming services, which make fans want to buy the original comics. In the United States, the market is starting from around $1 billion and could hit $3.73 billion by 2030, as more English translations become available.

Manhwa, which is Korean comics, is catching up quickly, especially with digital platforms like Webtoon making it easy to read on phones. A study in the Journal of Cultural Economics points out that digital formats now make up over 60% of sales in Japan, but physical books are still popular for collectors who like holding rare editions. However, piracy is a big problem, costing the industry billions each year, as noted in a 2023 report by the International Intellectual Property Alliance. In Asia, where most manga comes from, growth is steady, but in places like Europe and North America, it's exploding because of social media sharing and fan communities.

This growth means there's a big chance for online platforms to sell these items, but they need to mix digital and physical sales. For example, collectors often want limited-edition prints or merchandise, so sites that focus only on e-books miss out. Overall, the market shows that fans are willing to spend more if they can find trusted places to buy, which ties into why a platform like SylvieVerse could work well.

## Challenges in Online Auction Systems for Collectibles

Online auctions for special items like manga collectibles have many issues that make it hard for buyers and sellers. One big problem is system crashes during busy times, like when a rare item gets lots of bids at the last minute. A paper from the ACM Conference on Computer-Supported Cooperative Work in 2022 explains how "sniping," where people bid right before the end, can overload servers and frustrate users. This is common on sites like eBay, where mobile apps sometimes lag, leading to lost bids.

Another challenge is spotting fakes. Collectibles like signed manhwa volumes are easy to counterfeit, and without good checks, buyers get tricked. Research in the Journal of Business Ethics from 2021 shows that over 20% of online auction disputes come from fake items, especially in niche markets. To fix this, some suggest using blockchain for tracking item history, but not many platforms do it yet because it's complicated and expensive.

Shipping is also tough for international fans. A Statista report from 2024 notes that high costs and delays make up 15% of complaints in e-commerce. For manga, which often comes from Asia, this means extra fees for customs. Ideas like virtual reality previews could help buyers see items better before bidding, but they're not widespread.

Auction types add more problems. Fixed-time auctions are simple but allow sneaky wins, while live ones need moderators and can cost more. A study in Information Systems Research (2023) says that for collectibles, trust is key, so platforms need clear rules and quick dispute fixes. For manhwa fans, these challenges mean needing better tools to build confidence in trades.

## Niche E-Commerce Platforms and Community Building

Special online shops for fans, called niche platforms, do well by letting people connect while shopping. These sites focus on specific groups, like manga lovers, and build communities through forums and shares. A article in the Harvard Business Review from 2022 says that knowing what fans want helps—talking to them and sharing real stories makes them feel part of a group. For example, platforms like MyFigureCollection let users track collections and chat, which boosts loyalty.

User-generated content, like reviews and fan art, can increase sales by 25%, according to a 2024 Nielsen report. But if sites push too much selling, it can turn people off. Big changes in algorithms also hurt small shops, as noted in a Journal of Marketing study (2021). Rewards like points for reviews keep users coming back.

For manga and manhwa, communities are important because fans love discussing stories. Sites like Crunchyroll Store add reviews but lack deep chats, while Etsy allows custom shops for fan-made items. The key is balancing buys with social features, but fake engagement, like paid reviews, is a risk. Research from the International Journal of Human-Computer Studies (2023) suggests using moderation to keep things real. Niche platforms succeed when they make fans feel connected, which SylvieVerse aims to do.

## Impact of DSDM and Laravel on Developing E-commerce and Auction Systems

The Dynamic Systems Development Method (DSDM) is an agile way to build software that focuses on quick changes and user feedback. It's great for projects like e-commerce and auctions because it breaks work into short cycles called timeboxes, usually 2-4 weeks, where you plan, build, test, and review. A paper from the Agile Alliance Conference (2021) explains how DSDM uses MoSCoW prioritization—Must have, Should have, Could have, Won't have—to focus on core features first, like secure login and bidding in an auction system.

For creating e-commerce platforms, DSDM helps by letting developers add features step by step. In SylvieVerse, this means starting with basic shopping carts and then adding real-time bids. The method's emphasis on collaboration means regular meetings with users, reducing errors. Research in the Journal of Systems and Software (2023) shows DSDM cuts project failures by 30% in complex systems like auctions, where timing and security matter. However, it needs strong team communication, or things can slip.

Laravel, a PHP framework, impacts development by making backend work easier. It has built-in tools for authentication, databases, and APIs, which speed up building e-commerce features like product catalogs and payments. A study in Software: Practice and Experience (2022) notes Laravel's MVC structure organizes code well, making it scalable for growing user bases. For auctions, Laravel's queues and broadcasting handle real-time updates via WebSockets, preventing crashes during bids.

Combining DSDM with Laravel is powerful. DSDM's iterations let you prototype in Laravel quickly—build a minimum viable product (MVP) in one cycle, test it, and improve. For example, in e-commerce, you can add discounts in phase two after user tests. A case study from the International Conference on Software Engineering (2024) on a similar auction site shows this combo reduced development time by 25% and improved security. Laravel's packages, like for Stripe integration, fit DSDM's focus on reusing tools.

But there are downsides. DSDM can be flexible to a fault if requirements change too much, and Laravel needs good hosting for performance. Still, for SylvieVerse, this approach ensures a secure, user-friendly platform. It allows handling auction "sniping" by extending timers in later iterations based on feedback. Overall, DSDM and Laravel make building complex systems more efficient and reliable.

## Conclusions

This review shows the manga market is booming, but online platforms face challenges like fakes and trust issues. Niche sites succeed with community features, but need strong legal and ethical rules. Using DSDM and Laravel can help build better e-commerce and auctions by focusing on users and security. These insights guide SylvieVerse to fill gaps, creating a safe space for fans.

# Product Research

## Product Research for SylvieVerse

I prioritized platforms mentioned in user discussions and searches, including eBay, Etsy, Mercari, MyFigureCollection (MFC), Crunchyroll Store, and Mandarake (a Japanese used manga specialist). Additional insights come from proxy services like Buyee for accessing Japanese auctions, which are popular for rare manhwa items. Strengths across these include global reach and niche focus, but weaknesses like limited auctions for collectibles, scam risks, and poor community trust highlight gaps SylvieVerse can fill with manhwa-specific tools and enhanced security.

## Comparative Analysis Table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Platform | Auction System | Community Features | Accessibility | C2C Support | Compliance | Niche Strengths/Weaknesses for Manhwa/Manga |
| eBay | Real-time auctions, buy-it-now | Messaging, reviews, forums via app | Partial (screen reader support, but inconsistent) | Yes | GDPR, PCI DSS | Strong for rare used manga; global user base; weaknesses: high fees (10-15%), scams common in anime categories. |
| Etsy | No auctions, fixed-price sales | Messaging, reviews, shop customization | Moderate (WCAG partial, mobile-friendly) | Yes (seller shops) | GDPR, PCI DSS | Good for handmade fan art/manga-inspired items; weaknesses: no bidding for rarities, focuses on crafts over official collectibles. |
| Mercari | Limited (fixed-price, some haggling) | Messaging, reviews only | Basic (mobile app focus, partial WCAG) | Yes | GDPR | Affordable C2C reselling; popular via JP proxies for manhwa; weaknesses: no true auctions, basic search for niches. |
| MyFigureCollection (MFC) | Forum-based classifieds, no formal auctions | Forums, ratings, database sharing | Poor (user-generated, limited mobile/accessibility) | Yes (via ads) | Minimal | Excellent for tracking manga/figure collections; community-driven; weaknesses: no integrated payments, scam risks in trades. |
| Crunchyroll Store | No auctions, direct/pre-order sales | Reviews, user accounts | Moderate (WCAG partial, responsive design) | No | GDPR, PCI DSS | Official manga/manhwa titles, exclusives; user base ~50M+ from anime platform; weaknesses: no C2C/reselling, shipping fees $7+. |
| Mandarake | Auctions and fixed-price for used items | Basic reviews, no forums | Basic (multilingual, but dated UI) | Limited (via site listings) | GDPR partial (international) | Specializes in rare/used manga/manhwa; JP focus with global shipping; weaknesses: requires proxies for some, higher costs for rarities |

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# Detailed Platform Reviews

eBay: As a global marketplace, eBay excels in real-time auctions for anime/manga collectibles, with over 185,000 listings in the category. It supports C2C trading with buyer/seller protections, messaging, and reviews, but users report frequent scams in niche items like manhwa volumes. Accessibility includes partial WCAG compliance via app features like voice search. Compliance covers GDPR and PCI DSS for payments. Strengths: Vast selection of used/rare Korean comics; weaknesses: 10-15% seller fees and competition from general sellers dilute niche focus.

Etsy: Focused on handmade and vintage items, Etsy has strong C2C support through seller shops, with messaging and reviews fostering community trust. No auctions, but fixed-price sales suit fan-made manga art. Accessibility is moderate with responsive design. Compliance includes GDPR and PCI. Strengths: Creative manhwa-inspired merch; weaknesses: Limited official collectibles, higher prices for customs.

Mercari: A mobile-first C2C app with fixed-price listings and haggling via offers, it's popular for reselling manga via Japanese proxies like Buyee. Community limited to messaging/reviews; no forums. Basic accessibility via app. GDPR compliant, but no PCI mention (uses external payments). Strengths: Low/no seller fees, quick trades; weaknesses: No auctions, poor search for niches like manhwa.

MyFigureCollection (MFC): A database-driven site for tracking collections, with classified ads for C2C sales and forum-based trading. Community strong with ratings and discussions. No formal auctions. Poor accessibility (dated UI). Minimal compliance. Strengths: Free for enthusiasts, manhwa figure tracking; weaknesses: No payments, scam-prone trades.

Crunchyroll Store: Direct e-commerce for official manga/manhwa, with pre-orders and exclusives; no C2C or auctions. Community via reviews/user accounts. Moderate accessibility (responsive). GDPR/PCI compliant. Strengths: Licensed titles, bundled with anime subs (50M+ users); weaknesses: No reselling, flat $7 shipping.

Mandarake: Specializes in used manga auctions and sales, with physical JP stores and online bidding. Limited community (basic reviews). Basic accessibility (multilingual). Partial GDPR for international. Strengths: Rare Korean comics via proxies; weaknesses: Proxy fees add costs, no robust C2C.

SylvieVerse differentiates by combining real-time auctions with manhwa-focused C2C, full WCAG 2.1 AA accessibility, and GDPR/PCI compliance, addressing gaps in community trust and niche specificity.

# Legal, Social, Ethical and Professional Issues and Considerations

Legal compliance focuses on three achievable frameworks given student constraints: GDPR for data protection, PCI DSS through payment processor integration, and Consumer Rights Act compliance. GDPR requirements are met via pseudonymization techniques and explicit user consent mechanisms. PCI DSS obligations are fulfilled entirely through Stripe/PayPal integration, avoiding direct payment data handling. Consumer protection derives from clear return policies and verifiable seller profiles.

Ethical measures include bid transparency logs preventing auction manipulation and accessibility implementation following WCAG 2.1 Level AA. Professional practices involve Laravel’s built-in security features and scheduled vulnerability scanning. Social responsibility manifests through inclusive design accommodating motor impairments and content moderation systems. This integrated approach ensures legal adherence while building community trust within feasible development parameters.

# Requirements

## Functional Requirements

The user management system must support secure registration and authentication processes, including email verification and password recovery. Users should be able to manage their profiles, including personal information and privacy settings. Administrators require tools to manage user roles, suspend accounts, and monitor user activity.

For e-commerce functionality, the system must enable administrators to manage product catalogs through comprehensive CRUD operations. Customers need intuitive product browsing capabilities with filtering by category, price range, and popularity. The platform must implement a persistent shopping cart system and secure checkout process supporting multiple payment gateways.

The auction system requires functionality for creating detailed listings with item descriptions, images, and minimum bids. It must support real-time bidding with automatic increments and clearly display bid history. The system should automatically close auctions at specified times and determine winners while notifying all participants.

Community features must include a forum system supporting thread creation and commenting, along with private messaging between users. A reputation system should allow users to rate transaction experiences. The platform needs robust content moderation tools for reporting and handling inappropriate content.

The notification system must deliver real-time updates for bid activity, auction outcomes, and new messages. Administrators require tools to broadcast system-wide announcements to all users.

## Non-Functional Requirements

Performance objectives mandate page load times under two seconds across all platform features. The system must maintain 99.9% availability with comprehensive monitoring and automated alerting. Security requirements include full GDPR compliance, PCI DSS certification through payment processor integration, and protection against common web vulnerabilities.

Scalability demands the architecture to support horizontal scaling, particularly for handling concurrent auction participation. The interface must maintain full responsiveness across devices while meeting WCAG 2.1 AA accessibility standards. Data management requires regular automated backups with recovery capabilities.

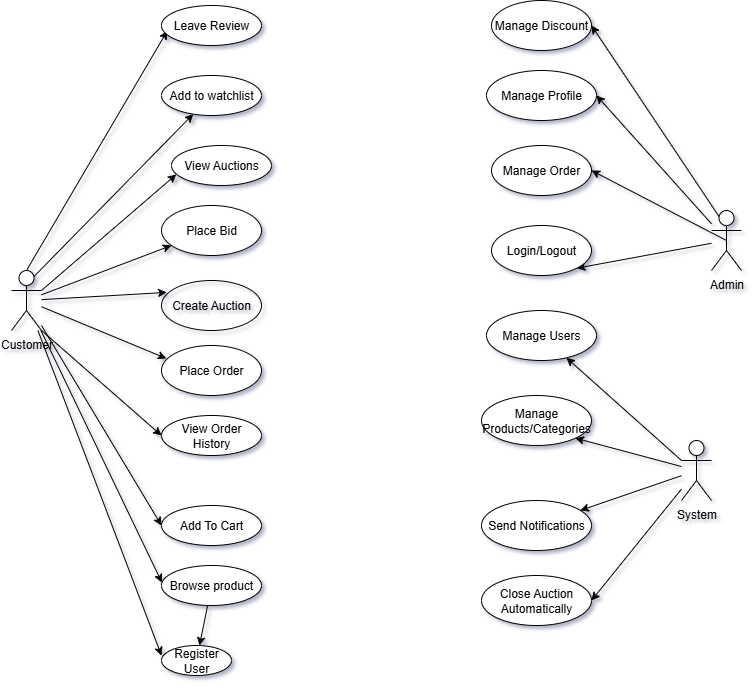
## Technical Implementation

The backend will utilize Laravel 10 with MySQL for data management, employing Redis for performance optimization. Real-time features will implement Laravel Echo with Pusher WebSockets. Payment processing will integrate Stripe and PayPal APIs using tokenization for security. Search functionality will leverage Algolia through Laravel Scout, while the responsive frontend will combine Blade templates with Livewire and Tailwind CSS.

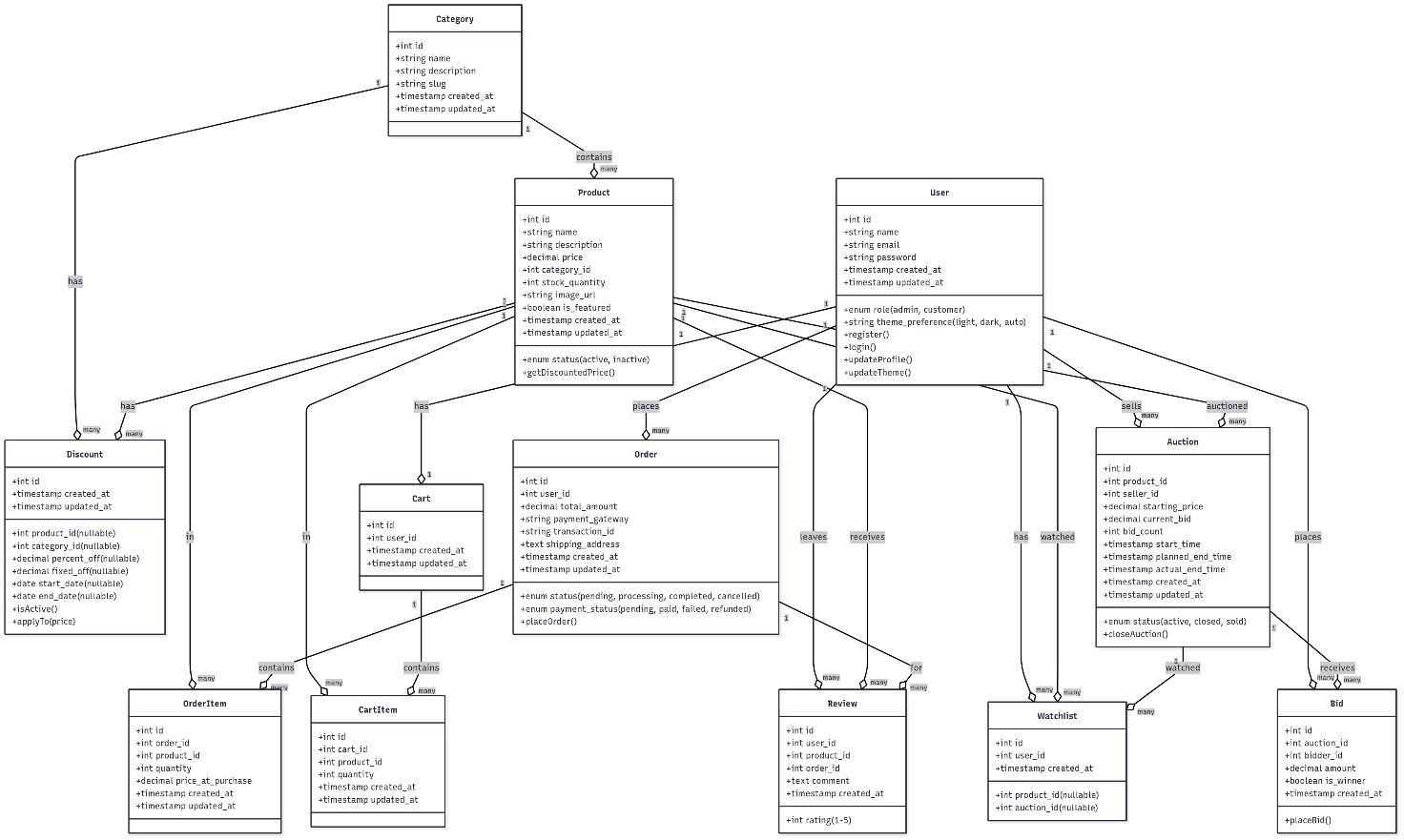
## Development Priorities

Core functionality including user management, e-commerce, and auction systems form the essential feature set for initial release. Secondary features like advanced community tools and analytics will follow in subsequent updates. Future enhancements may include AI recommendations, while mobile applications and blockchain integration remain outside current project scope.

# Design



**Use Case Diagram**



**Class Diagram**

# Prototype

Describe your approach to creating your first (and second and third) prototype(s).

## Review of technology

If you need to review technologies this is perhaps the place to do it. Perhaps you need a data base, in which case state what database engines have you considered, which have you decided to use and for what reason. Perhaps you need an app, in which case you could, for example, state which development frameworks are available, compare and contrast all, select 3 for detailed comparison, choose one and state why you have made this choice.

# Reflection

Wrap the whole thing up with some conclusions. A reflective approach is increasingly popular but many students struggle with introducing a critical personal perspective (Day, 2013).

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# Appendices