VENDGROS
Community Bulk Sales Marketplace

Software Requirements Specification

Version 1.0

vendgros.ca (Canada)

vendgros.com (International)

MVP Target: 4 Weeks

Document Date: January 2025

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1. Executive Summary

Vendgros is a community-driven marketplace platform enabling individuals and businesses to sell surplus inventory, end-of-line products, and second-hand items in bulk quantities. The platform connects local sellers with nearby buyers through a secure reservation and deposit system, facilitating in-person pickup transactions.

The platform operates on a performance-based revenue model with zero subscription fees. Buyers pay a 5% deposit to reserve items, with the remaining 95% paid directly to the seller at pickup. This creates a trusted intermediary layer that reduces no-shows and ensures transaction commitment.

1.1 Business Objectives

- Create a zero-friction marketplace for bulk and surplus sales in local communities
- Enable B2B surplus inventory liquidation and C2C second-hand sales
- Provide secure reservation system with deposit-based commitment
- Implement QR code verification for secure pickup transactions
- Build trust through bi-directional blind rating system
- Launch in Canada with architecture supporting international expansion
- Deliver MVP within 4-week development timeline

1.2 Target Markets

1.2.1 Seller Types

- **Merchants (B2B):** Businesses with surplus inventory, end-of-line products, overstock clearance
- **Individuals (C2C):** Personal goods sales, garage sale items, bulk second-hand goods

1.2.2 Buyer Types

- **Resellers:** Small business owners looking for wholesale deals
- **Bargain Hunters:** Consumers seeking bulk discounts on local products
- **Community Members:** Local buyers preferring in-person transactions

1.3 Geographic Scope

The platform launches exclusively in Canada (vendgros.ca) with multilingual support for English, French, and Spanish. The architecture is designed for international expansion, with vendgros.com reserved for future global deployment. Each country deployment will operate as an independent instance with localized domain, currency, and compliance requirements.

1.4 Platform Scope

- **Web Application:** Responsive web app with full feature set (Next.js 15)
- **Mobile Applications:** Native iOS and Android apps (React Native/Expo)
- **Platform Philosophy:** Feature parity across platforms with strategic mobile-only features for physical transactions

2. Business Model

2.1 Revenue Model

Vendgros operates on a zero-subscription, performance-based revenue model:

Component	Description
Subscription Fee	$0 — Free for both merchants and individuals
Service Fee	5% of total price, collected as reservation deposit
Buyer Payment	5% deposit online → 95% balance at pickup
Seller Revenue	95% paid directly to seller at physical pickup
No-Show Policy	Deposit retained by Vendgros if buyer fails to show

2.2 Platform Role

Vendgros serves as:

- **Technology Intermediary:** Providing the marketplace infrastructure
- **Quality Moderator:** Reviewing and approving listings before publication
- **Trusted Third Party:** Securing reservations through deposit system
- **Transaction Facilitator:** QR code verification for pickup confirmation

2.3 Tax Compliance (Canada)

- **Individual Sellers:** Personal goods sales with no tax collection required
- **Merchant Sellers:** Responsible for collecting GST/HST/QST on total amount at pickup
- **Vendgros Revenue:** Collects applicable sales tax only on the 5% service fee

3. System Overview

3.1 Platform Architecture

Vendgros is built on a modern TypeScript-first monorepo architecture using the T3 Stack, optimized for rapid development and type safety across all platforms.

3.1.1 High-Level Components

- **Web Application:** Next.js 15 (App Router) with TypeScript, Tailwind CSS, shadcn/ui
- **Mobile Applications:** React Native (Expo SDK 52+) with NativeWind
- **API Layer:** tRPC v11 (type-safe end-to-end APIs)
- **Database:** PostgreSQL 16 with PostGIS extension for geospatial queries
- **ORM:** Prisma 6.x with type-safe database client
- **Cache/Queue:** Redis for sessions, caching, and BullMQ job queues
- **File Storage:** DigitalOcean Spaces (S3-compatible) with Cloudflare CDN
- **Payments:** Stripe (web and mobile SDKs)
- **Authentication:** NextAuth v5 with SMS/Email OTP (Twilio + Resend)

3.1.2 Monorepo Structure

- **Starter:** create-t3-turbo (production-ready T3 Stack monorepo)
- **Build Tool:** Turborepo with intelligent caching
- **Package Manager:** pnpm workspaces
- **Shared Packages:** UI components, database, API, auth, validators, i18n, utils

3.1.3 Infrastructure

- **Hosting:** DigitalOcean App Platform (Toronto TOR1 datacenter)
- **Database:** DigitalOcean Managed PostgreSQL 16
- **Redis:** DigitalOcean Managed Redis
- **CDN/Security:** Cloudflare (CDN, WAF, DDoS protection)
- **CI/CD:** Built into DO App Platform (auto-deploy from GitHub)
- **Mobile Builds:** Expo EAS (cloud build service)
- **Data Residency:** Canada-only (Toronto datacenter) for compliance

3.2 Transaction Flow

The platform implements a secure deposit-based reservation system:

3.2.1 Listing Creation (Seller)

- Seller creates listing with product details, quantity, price per piece
- Sets pickup address, instructions, and availability
- Optionally limits maximum quantity per buyer
- Listing enters moderation queue for review

3.2.2 Reservation (Buyer)

- Buyer searches listings by location (postal code or proximity radius)
- Selects quantity to reserve
- Pays 5% deposit online via Stripe
- Receives QR code and reservation details

3.2.3 Pickup (Both Parties)

- Buyer arrives at pickup location with QR code
- Seller scans QR code via mobile app (or enters 6-digit code on web)
- Buyer pays 95% balance directly to seller

- Transaction marked complete, rating window opens

4. User Roles and Permissions

4.1 User Types

Role	Description	Primary Actions
Buyer	Consumers purchasing items	Browse, reserve, pay deposit, pickup
Seller (Individual)	C2C personal goods sellers	List items, manage inventory, complete sales
Seller (Merchant)	B2B business inventory	Bulk listings, tax collection, business profile
Administrator	Platform operators	Moderation, user management, analytics

4.2 Identity Verification Protocol

All users must complete strict identity verification before account activation:

4.2.1 Dual Validation Requirement
- **Email Verification:** OTP sent to email address, must be confirmed
- **Phone Verification:** OTP sent via SMS to Canadian phone number (+1)
- **Account Status:** Remains UNVERIFIED until both validations complete

4.2.2 Modification Rules
- Any change to email or phone number triggers immediate account suspension
- All active listings are hidden during suspension
- Full re-validation required to reactivate account

4.3 Feature Access by Platform

Feature	Web	Mobile	Notes
Email/SMS OTP Authentication	✓	✓	Mandatory on both
Browse listings by distance	✓	✓	PostGIS queries
Search by postal code	✓	✓	Canadian postal codes
Filter by category/price	✓	✓	Identical UI
Make reservation + 5% deposit	✓	✓	Stripe integration
View QR code	✓	✓	Display only on web
Create/edit listings	✓	✓	Both platforms
Photo upload	✓	✓	Native camera on mobile
QR code scanning	✗	✓	Mobile-only
Manual code verification	✓	✓	Web fallback
Digital signature capture	✗	✓	Mobile-only
Proximity push notifications	✗	✓	Mobile-only
Email notifications	✓	✓	Both platforms
Bi-directional ratings	✓	✓	Identical workflow

5. Functional Requirements

5.1 Listing Management

5.1.1 Listing Creation

FR-1   Sellers shall be able to create listings with: title, description, category, photos (multiple)

FR-2   Sellers shall specify: price per piece, total quantity available, unit type

FR-3   Sellers shall optionally set maximum quantity per buyer (purchase limit)

FR-4   Sellers shall provide: pickup address, pickup instructions, availability schedule

FR-5   Listings shall require at least one photo before submission

FR-6   Pickup address shall be geocoded automatically using PostGIS

5.1.2 Moderation Workflow

FR-7   All new listings shall enter DRAFT status during creation

FR-8   Submitted listings shall transition to PENDING_REVIEW for moderation

FR-9   Approved listings shall become PUBLISHED and visible on the map

FR-10 Edits to critical fields (price, quantity, description) shall re-trigger moderation

FR-11 Rejected listings shall receive feedback and return to DRAFT for revision

5.1.3 Listing Status Flow

Listings progress through the following statuses:

- **DRAFT:** Being edited by seller, not visible
- **PENDING_REVIEW:** Awaiting administrator approval
- **PUBLISHED:** Visible on map, available for reservation
- **RESERVED:** Deposit paid, removed from public view
- **COMPLETED:** QR scanned, transaction finalized
- **EXPIRED:** Listing past availability date
- **CANCELLED:** Removed by seller or admin

5.2 Search and Discovery

5.2.1 Geospatial Search

FR-12 Buyers shall search listings by proximity radius (km) from current location

FR-13 Buyers shall search listings by Canadian postal code

FR-14 Search results shall display distance from search point

FR-15 Map view shall display listing markers clustered by location

FR-16 Postal code database shall use Canadian data from zipcodesoft.com

5.2.2 Filtering and Sorting

FR-17 Buyers shall filter by category, price range, seller type (individual/merchant)

FR-18 Buyers shall sort by distance, price, date posted, seller rating

FR-19 Search shall support keyword matching in title and description

5.3 Reservation System

5.3.1 Making a Reservation

FR-20 Buyers shall select quantity to reserve (within available stock and limits)

FR-21 System shall calculate 5% deposit amount based on total price

FR-22 Buyers shall pay deposit via Stripe (web or mobile SDK)

FR-23 Upon successful payment, reservation shall be confirmed

FR-24 Listing inventory shall be decremented by reserved quantity

FR-25 Seller shall receive notification of new reservation

5.3.2 QR Code Generation

FR-26 System shall generate unique QR code for each reservation

FR-27 QR code shall encode reservation ID and verification hash

FR-28 Buyer shall receive QR code in-app and via email

FR-29 6-digit alphanumeric code shall be displayed alongside QR for manual entry

5.3.3 Reservation Details

FR-30 Buyer shall view: item details, quantity reserved, deposit paid, balance due

FR-31 Buyer shall view: pickup address, instructions, seller contact info

FR-32 Buyer shall view: reservation status and expiration time

5.4 Transaction Completion

5.4.1 QR Code Scanning (Mobile)

FR-33 Seller shall scan buyer's QR code using mobile app camera

FR-34 System shall validate QR code and display reservation details

FR-35 Seller shall confirm pickup completion to finalize transaction

FR-36 Digital signature capture shall be available for high-value items

5.4.2 Manual Verification (Web Fallback)

FR-37 Buyer shall provide 6-digit reservation code to seller

FR-38 Seller shall enter code on web dashboard to validate reservation

FR-39 Optional photo upload of buyer ID or signed receipt for audit trail

FR-40 Digital signature not available via web fallback

5.4.3 Balance Payment

FR-41 95% balance shall be paid directly to seller at pickup (cash, e-transfer, etc.)

FR-42 Platform does not process the balance payment—only facilitates the meeting

FR-43 Merchant sellers are responsible for tax collection on total amount

5.5 Rating System

5.5.1 Bi-Directional Blind Reviews

FR-44 Both parties shall be prompted to rate after transaction completion

FR-45 Ratings shall remain hidden until both parties have submitted (blind review)

FR-46 Rating window shall remain open for 7 days after pickup

FR-47 If one party doesn't rate within window, other party's rating becomes visible

5.5.2 Rating Criteria

Buyer rates seller on:

- Product conformity (matches description and photos)
- Communication responsiveness
- Pickup experience
- Overall transaction experience

Seller rates buyer on:

- Punctuality at pickup
- Ease of balance payment
- Overall transaction experience

5.5.3 No-Show Management

FR-48 If buyer fails to show up, deposit is retained by Vendgros

FR-49 1-star rating is automatically assigned to buyer's profile

FR-50 Reserved quantity is returned to listing inventory

FR-51 Seller can report no-show after reservation expires

5.6 Notifications

5.6.1 Email Notifications

FR-52 Account verification OTP

FR-53 Listing approval/rejection status

FR-54 New reservation confirmation (buyer and seller)

FR-55 Transaction completion confirmation

FR-56 Rating reminder

5.6.2 SMS Notifications

FR-57 Account verification OTP

FR-58 New reservation alert (seller)

FR-59 Pickup reminder (buyer)

5.6.3 Push Notifications (Mobile)

FR-60 Proximity alerts when buyer approaches pickup location

FR-61 New reservation notification

FR-62 Listing status changes

FR-63 Rating requests

5.7 Administration

5.7.1 Moderation Dashboard

FR-64 Administrators shall view queue of pending listings for review

FR-65 Administrators shall approve or reject listings with feedback

FR-66 Administrators shall flag and remove inappropriate content

FR-67 Administrators shall view listing history and edit logs

5.7.2 User Management

FR-68 Administrators shall view all user accounts and verification status

FR-69 Administrators shall suspend or ban accounts for policy violations

FR-70 Administrators shall view user transaction history and ratings

5.7.3 Analytics Dashboard

FR-71 Dashboard shall display: active listings, reservations, completed transactions

FR-72 Dashboard shall display: revenue from deposits, no-show rate, average rating

FR-73 Dashboard shall display geographic distribution of activity

5.8 Internationalization

FR-74 Platform shall support English (primary), French, and Spanish languages

FR-75 Language shall auto-detect from browser/device settings

FR-76 Manual language switcher shall be available in header/settings

FR-77 Web shall use locale-specific URLs (/en/, /fr/, /es/)

FR-78 Date, time, and currency formatting shall respect locale

6. Non-Functional Requirements

6.1 Performance

NFR-1 Page load time shall not exceed 3 seconds under normal conditions

NFR-2 API response time shall not exceed 500ms for 95% of requests

NFR-3 Geospatial search queries shall return within 1 second

NFR-4 QR code scanning shall validate within 2 seconds

NFR-5 Image uploads shall complete within 5 seconds

6.2 Availability

NFR-6 Platform shall maintain 99.5% uptime excluding scheduled maintenance

NFR-7 Scheduled maintenance shall occur during off-peak hours (2-6 AM ET)

NFR-8 Zero-downtime deployments via DigitalOcean App Platform

6.3 Scalability

NFR-9 Architecture shall support auto-scaling based on traffic

NFR-10   Database shall handle 100,000+ listings without degradation

NFR-11   File storage shall scale automatically via DigitalOcean Spaces

NFR-12   Architecture shall support future multi-region deployment

6.4 Usability

NFR-13   Web interface shall be fully responsive (mobile, tablet, desktop)

NFR-14   Mobile apps shall follow platform-specific design guidelines (iOS HIG, Material Design)

NFR-15   Navigation shall be consistent across web and mobile platforms

NFR-16   System shall comply with WCAG 2.1 Level AA accessibility standards

6.5 Compatibility

NFR-17   Web shall support latest versions of Chrome, Firefox, Safari, Edge

NFR-18   iOS app shall support iOS 15+ (iPhone 6s and newer)

NFR-19   Android app shall support Android 10+ (API level 29+)

7. Security Requirements

7.1 Authentication

SEC-1 All accounts shall require dual validation (email + Canadian phone)

SEC-2 OTP codes shall expire after 10 minutes

SEC-3 Failed login attempts shall be limited to 5 per 15-minute window

SEC-4 Web sessions shall use secure HTTP-only cookies

SEC-5 Mobile sessions shall use secure token storage (Keychain/Keystore)

7.2 Data Protection

SEC-6 All data in transit shall be encrypted using TLS 1.3

SEC-7 All data at rest shall be encrypted using AES-256

SEC-8 Payment card data shall never be stored (handled by Stripe)

SEC-9 Phone numbers shall be stored in hashed format where possible

SEC-10   Data shall reside exclusively in Canadian datacenter (Toronto)

7.3 Infrastructure Security

SEC-11   Cloudflare WAF shall protect against common attack vectors

SEC-12   DDoS protection via Cloudflare

SEC-13   Container isolation via DigitalOcean App Platform

SEC-14   VPC network isolation for database and Redis

SEC-15   Automatic SSL certificate management

7.4 Application Security

SEC-16   CSRF protection via NextAuth

SEC-17   SQL injection prevention via Prisma parameterized queries

SEC-18   XSS protection via React automatic escaping + Cloudflare CSP

SEC-19   Rate limiting via Redis middleware

SEC-20   Input validation via Zod schemas (shared frontend/backend)

7.5 Compliance

SEC-21   PIPEDA compliance for Canadian personal data

SEC-22   Quebec Law 25 compliance for privacy

SEC-23   Data residency in Canada for all user data

SEC-24   Privacy policy and terms of service in EN/FR

8. Technical Requirements

8.1 Technology Stack

Layer	Technology	Purpose
Monorepo	Turborepo + pnpm	Fast builds, shared packages
Web Framework	Next.js 15 (App Router)	SSR, SEO, API routes
Mobile Framework	React Native (Expo 52+)	Cross-platform native apps
Language	TypeScript 5.x	Type safety end-to-end
API	tRPC v11	Type-safe APIs, no schemas
Database	PostgreSQL 16 + PostGIS	Relational + geospatial
ORM	Prisma 6.x	Type-safe database access
Cache/Queue	Redis + BullMQ	Sessions, jobs, caching
Auth	NextAuth v5	OAuth, credentials, sessions
OTP	Twilio + Resend	SMS and email delivery
Payments	Stripe	PCI-compliant processing
Storage	DO Spaces + Cloudflare	S3-compatible + CDN
Web UI	Tailwind + shadcn/ui	Utility CSS + components
Mobile UI	NativeWind + RN Paper	Tailwind for RN
Maps (Web)	Mapbox GL or Leaflet	Geospatial display
Maps (Mobile)	react-native-maps	Native map SDKs
State	TanStack Query + Zustand	Server and client state
i18n (Web)	next-intl	App Router i18n
i18n (Mobile)	i18next	React Native i18n

8.2 Infrastructure

Service	Provider	Configuration
Web Hosting	DO App Platform	Toronto TOR1, auto-deploy
Database	DO Managed PostgreSQL	v16 + PostGIS, Toronto
Cache	DO Managed Redis	Sessions, BullMQ queues
File Storage	DO Spaces	S3-compatible, Toronto
CDN	Cloudflare	Global CDN, image optimization
Security	Cloudflare	WAF, DDoS protection
Mobile Builds	Expo EAS	Cloud builds iOS/Android
iOS Distribution	App Store Connect	TestFlight → Production
Android Distribution	Google Play	Internal Testing → Prod
Monitoring	Sentry	Error tracking, performance
CI/CD	DO App Platform	Auto-deploy from GitHub

8.3 Postal Code Database

TECH-1   Canadian postal code data shall be sourced from zipcodesoft.com

TECH-2   Data shall include geospatial coordinates for each postal code

TECH-3   Loading shall be separate from regular migrations (dedicated import script)

TECH-4   Refresh cycle: quarterly updates or as needed

TECH-5   PostGIS spatial index shall optimize proximity searches

9. AI Agent Recommendations

The following features are recommended for post-MVP implementation using AI agents to enhance platform efficiency and user experience.

9.1 Moderation AI Agent

AI-1 **Image Analysis:** AI screening of listing photos for inappropriate content or policy violations

AI-2 **Text Analysis:** NLP analysis of descriptions for prohibited items or scam patterns

AI-3 **Auto-Approval:** Low-risk listings auto-approved, flagged items sent to human review

AI-4 **Fraud Detection:** Pattern recognition for potential fraud or scam listings

9.2 Pricing AI Agent

AI-5 **Price Suggestion:** AI-powered price recommendations based on similar listings

AI-6 **Market Analysis:** Local market pricing trends for categories

AI-7 **Overpricing Alerts:** Warn sellers when prices significantly exceed market rates

9.3 Communication AI Agent

AI-8 **FAQ Chatbot:** Automated answers to common buyer/seller questions

AI-9 **Translation:** Real-time translation of messages between EN/FR/ES users

AI-10 **Description Enhancement:** AI assistance for sellers writing compelling listing descriptions

9.4 Trust & Safety AI Agent

AI-11 **Behavior Analysis:** Pattern detection for suspicious user behavior

AI-12 **No-Show Prediction:** Risk scoring for reservation no-shows based on history

AI-13 **Review Authenticity:** Detection of fake or manipulated ratings

9.5 Implementation Priority

- **Phase 1 (Post-MVP):** FAQ Chatbot, basic image screening
- **Phase 2:** Moderation AI, price suggestions
- **Phase 3:** Advanced fraud detection, behavior analysis

10. Data Model Overview

10.1 Core Entities

10.1.1 User

- id, email, phone, password_hash
- email_verified, phone_verified, account_status
- user_type (BUYER, SELLER_INDIVIDUAL, SELLER_MERCHANT)
- language_preference, notification_preferences
- rating_average, rating_count

10.1.2 Listing

- id, seller_id (FK), title, description, category
- price_per_piece, quantity_total, quantity_available
- max_per_buyer (optional limit)
- pickup_address, pickup_instructions, location (PostGIS POINT)
- status (DRAFT, PENDING_REVIEW, PUBLISHED, etc.)
- photos (array of URLs)

10.1.3 Reservation

- id, listing_id (FK), buyer_id (FK)
- quantity_reserved, total_price, deposit_amount
- qr_code_hash, verification_code (6-digit)
- status (PENDING, CONFIRMED, COMPLETED, NO_SHOW, CANCELLED)
- stripe_payment_intent_id
- expires_at, completed_at

10.1.4 Rating

- id, reservation_id (FK)
- rater_id (FK), rated_id (FK)
- score (1-5), comment
- is_visible (false until both parties rate)

10.1.5 PostalCode

- code (primary key), city, province
- location (PostGIS POINT)
- Spatial index for proximity queries

10.2 Key Relationships

- User → Listing (1:N as seller)
- User → Reservation (1:N as buyer)
- Listing → Reservation (1:N)
- Reservation → Rating (1:2, one from each party)

11. Development Roadmap

The MVP shall be developed, tested, and deployed within a 4-week timeline.

11.1 Timeline Overview

Week	Phase	Deliverables
Week 1	Foundation	DB + PostGIS, Auth (OTP), UI foundation (web + mobile)
Week 2	Listings	Listing CRUD, moderation, geospatial search
Week 3	Transactions	Stripe, QR codes, scanner, signature, push notifications
Week 4	Launch	Web fallback, pilot testing, production deployment

11.2 Week 1: Foundation

- Bootstrap project with create-t3-turbo
- Database schema with Prisma + PostGIS extension
- Canadian postal code import from zipcodesoft.com
- Authentication system (NextAuth + SMS/Email OTP)
- Dual validation workflow (email + phone)
- Responsive UI foundation (web + mobile shells)
- i18n setup (EN/FR/ES)

11.3 Week 2: Listings & Search

- Listing creation interface (web + mobile)
- Photo upload to DigitalOcean Spaces
- Moderation workflow and admin dashboard
- Geospatial search (proximity + postal code)
- Map display (Mapbox/Leaflet web, native mobile)
- Filtering and sorting
- Cross-platform state management

11.4 Week 3: Transactions

- Stripe integration (5% deposit checkout)
- QR code generation
- QR scanner (mobile) using expo-camera
- Digital signature capture (mobile)
- Push notifications (Expo)
- Proximity alerts for pickup
- Bi-directional blind rating system

11.5 Week 4: Launch

- Web fallback for manual verification
- Email and SMS notification templates
- Pilot phase with partner merchants
- End-to-end testing
- Mobile app submission (TestFlight + Google Play Internal)
- Production deployment to vendgros.ca
- Official launch

11.6 Post-MVP Roadmap

- AI moderation agents
- Advanced analytics dashboard
- Seller verification badges
- International expansion (additional countries)
- In-app messaging between buyers and sellers

12. Appendices

12.1 Glossary

- **Deposit:** 5% of total price paid online to reserve items
- **Balance:** 95% of total price paid directly to seller at pickup
- **Blind Review:** Rating system where scores are hidden until both parties submit
- **PostGIS:** PostgreSQL extension for geospatial data and queries
- **tRPC:** Type-safe API framework with end-to-end type inference
- **OTP:** One-Time Password for verification
- **B2B:** Business-to-Business (merchant sellers)
- **C2C:** Consumer-to-Consumer (individual sellers)
- **GST/HST/QST:** Canadian sales taxes (federal and provincial)

12.2 Domain Names

- **vendgros.ca:** Primary domain for Canadian launch
- **vendgros.com:** Reserved for international expansion

12.3 Document History

Version	Date	Author	Changes
1.0	Jan 2025	Vendgros Team	Initial release

12.4 Contact Information

For questions regarding this specification:

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