

# eCommerce Platform

## ShopHub



deti

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# Core Features



Product Catalog  
Management  
(categories, reviews,  
ratings)



Shopping Cart & Checkout



Order Management System



Inventory Management



Landing Pages & Marketing  
Banners



AI-Powered Chatbot



Secure Authentication  
(Keycloak)

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# Tech Stack

Backend: Spring Boot

Frontend: React 19

Database: PostgreSQL

Authentication: Keycloak

Containerized: Terraform & Docker & Docker Compose

## **This offers**

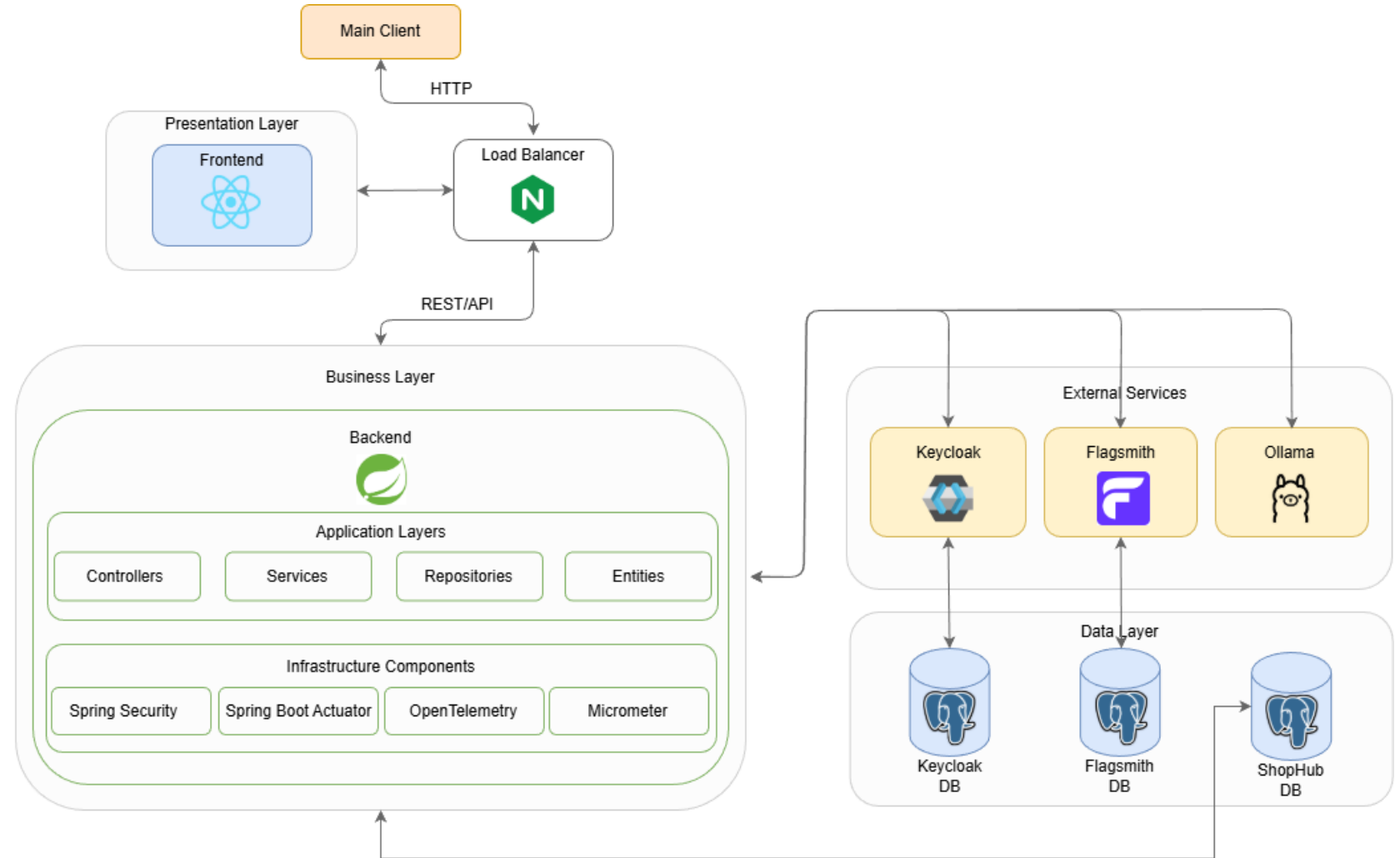
Full audit logging

User notification system

Multiple shipping/billing addresses



# Architecture



# Personas

## Ana Silva, Customer

**Profile:** 28 years, marketing manager, tech-savvy, shops online regularly (mostly uses her phone)

**Wants:** Speed, simplicity, clear information

**Goals:**

- Find products quickly
- Compare options & read reviews
- Get relevant recommendations

**Cons:** No time for slow or cluttered websites

**Pros:** Fast search, filters, reviews, AI assistance

## João Costa, Admin

**Profile:** 35, e-commerce manager, 8 years experience

**Wants:** Control, visibility, efficiency

**Goals:**

- Manage products and inventory easily
- Monitor sales in real time
- Make data-driven decisions

**Cons:** Manual work and delayed reports

**Pros:** Real-time dashboard, alerts, analytics

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# Core user stories

## Browse Products

**As a customer**, I want to browse products by category and filters **So that** I can easily discover relevant items

- Products grouped by category
- Pagination / infinite scroll
- Filter by price

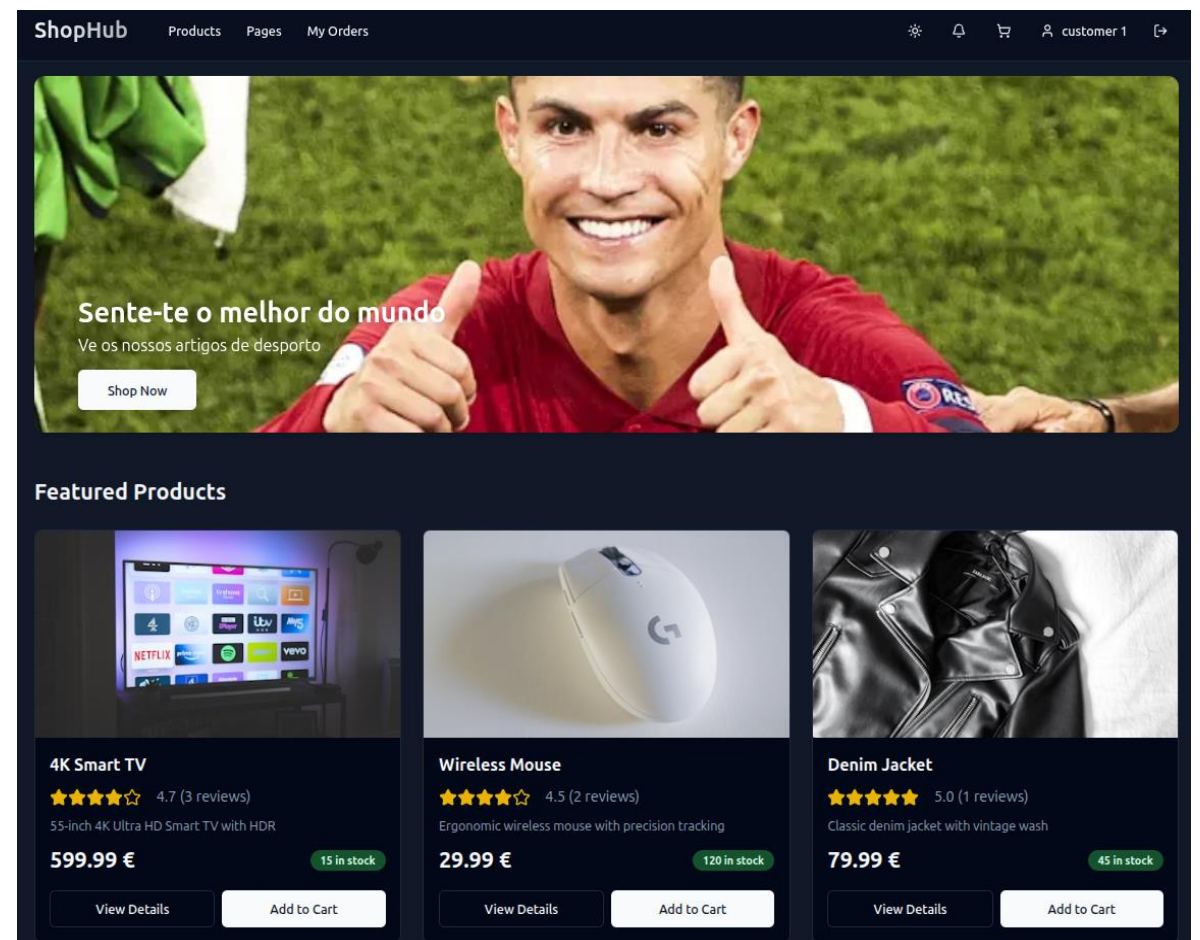
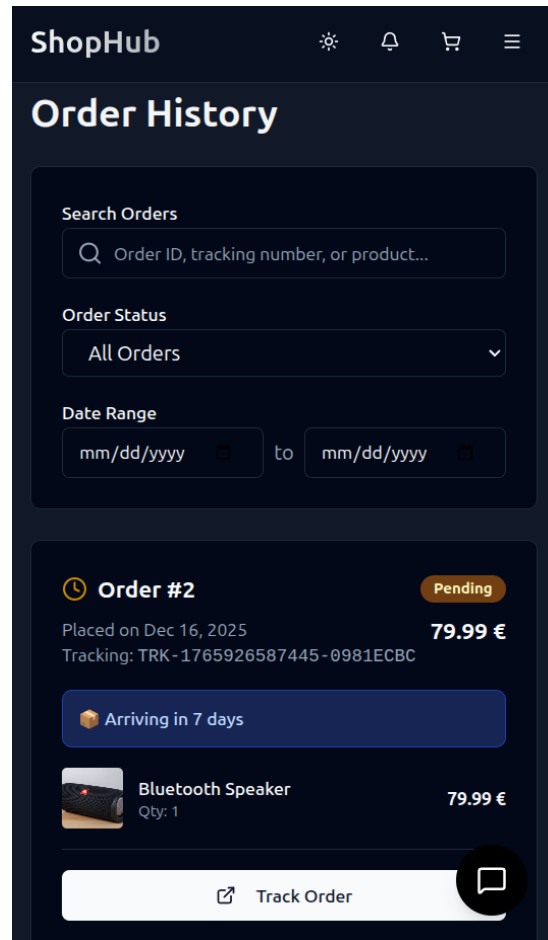
## Manage Product Listings

**As an administrator**, I want to manage product listings and inventory **So that** customers always see accurate product information and availability.

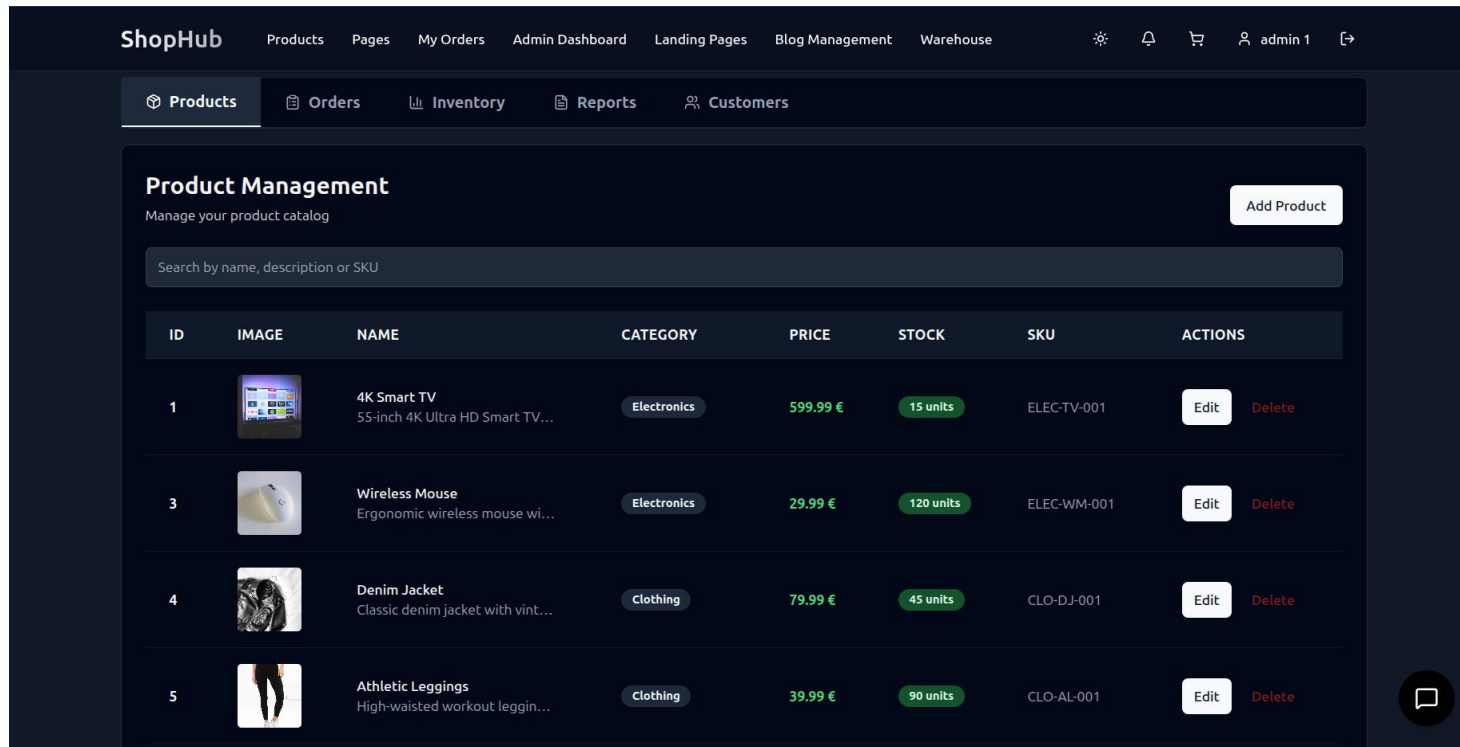
- Add, edit or remove products
- Update prices and stock in real time
- Prevent stock and data errors

# Client View

- Browse products
- Add to cart
- Checkout & place order
- Track order status



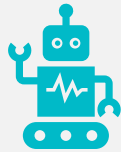
# Personnel View



- View orders & manage status
- Manage products & inventory
- View sales reports
- Content management (banners, landing pages)



# Extra features for a better experience



**AI Chatbot**



**Quality Metrics & Monitoring**



**Observability**

Availability  
Performance  
Reliability  
Throughput metrics  
Real-time monitoring

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# Security and Scalability



KEYCLOAK ENTERPRISE  
AUTHENTICATION



CONTAINERIZED  
ARCHITECTURE (SCALES  
EASILY)



DATABASE HEALTH CHECKS



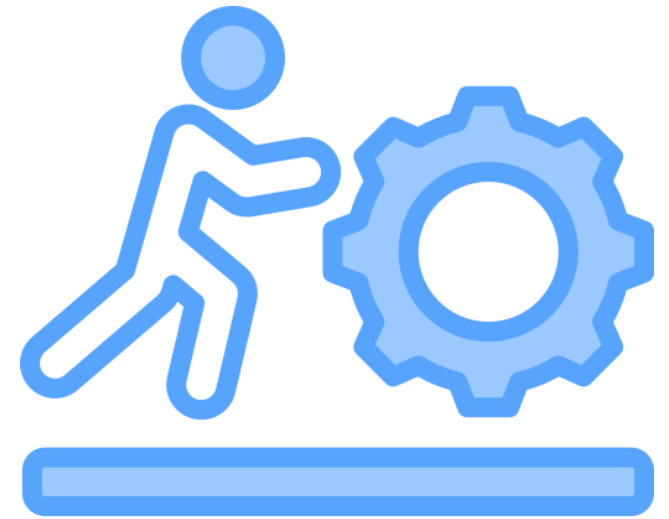
AUDIT LOGGING FOR  
COMPLIANCE

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# Future work

## Potential improvements for future developers:

- Payment Integration (e.g stripe)
- Staging Environment (staging server to enable thorough testing before production releases)
- Role Management (allow administrators to modify user roles)



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# What we learned

- **DevOps Cycle:** Complete automation of build, test, and deployment workflows
- **Advanced Testing:** Unit, integration, and end-to-end testing strategies across the platform
- **Infrastructure as Code:** Terraform-managed cloud infrastructure with version control
- **Monitoring & Observability:** Distributed tracing, metrics collection, and real-time dashboards
- **MLOps Practices:** LLM integration with RAG for intelligent product assistance

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# Public IP for live demo

[4.235.120.134](#)