

eCommerce Platform

ShopHub

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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)

Tech Stack

Backend: Spring Boot

Frontend: React 19

Database: PostgreSQL

Authentication: Keycloak

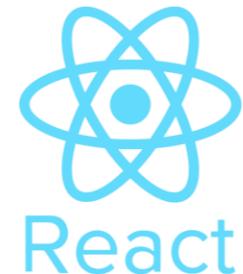
Containerized: Terraform & Docker & Docker Compose

This offers

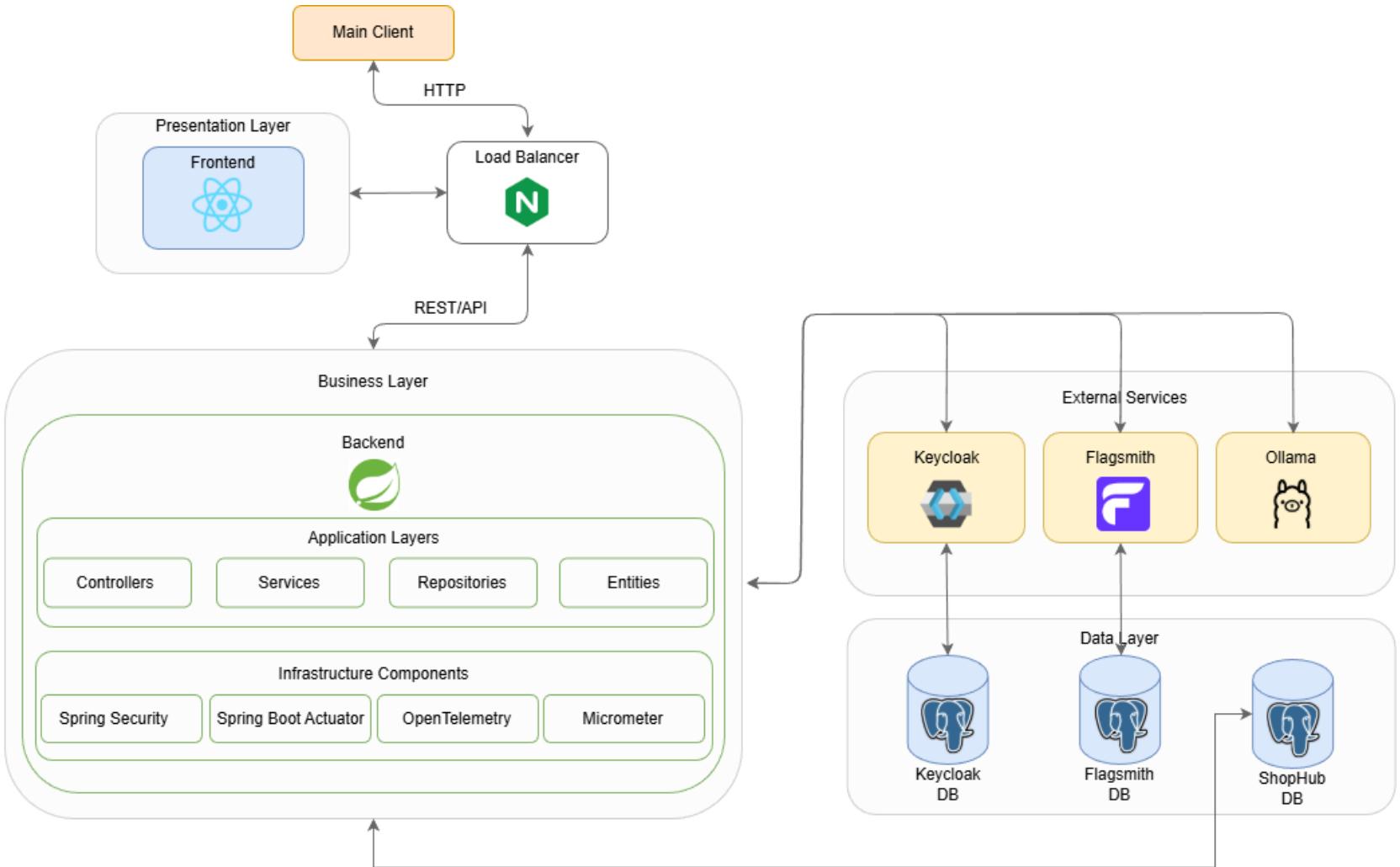
Full audit logging

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

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

ShopHub

Order History

Search Orders

Order Status

Date Range to

Order #2 Pending

Placed on Dec 16, 2025 79.99 €

Tracking: TRK-1765926587445-0981ECBC

Arriving in 7 days

Bluetooth Speaker Qty: 1 79.99 €

Track Order

ShopHub Products Pages My Orders



Sente-te o melhor do mundo
Ve os nossos artigos de desporto

Shop Now

Featured Products

4K Smart TV 599.99 € 15 in stock

Wireless Mouse 29.99 € 120 in stock

Denim Jacket 79.99 € 45 in stock

Personnel View

The screenshot shows the ShopHub admin dashboard with a dark theme. The top navigation bar includes links for Products, Pages, My Orders, Admin Dashboard, Landing Pages, Blog Management, and Warehouse, along with user information for 'admin 1'. Below the navigation is a secondary navigation bar with tabs for Products, Orders, Inventory, Reports, and Customers. The main content area is titled 'Product Management' and features a sub-header 'Manage your product catalog'. A search bar allows searching by name, description, or SKU. An 'Add Product' button is located in the top right of this section. The main table displays five products with the following details:

ID	IMAGE	NAME	CATEGORY	PRICE	STOCK	SKU	ACTIONS
1		4K Smart TV 55-inch 4K Ultra HD Smart TV...	Electronics	599.99 €	15 units	ELEC-TV-001	Edit Delete
3		Wireless Mouse Ergonomic wireless mouse wi...	Electronics	29.99 €	120 units	ELEC-WM-001	Edit Delete
4		Denim Jacket Classic denim jacket with vint...	Clothing	79.99 €	45 units	CLO-DJ-001	Edit Delete
5		Athletic Leggings High-waisted workout leggin...	Clothing	39.99 €	90 units	CLO-AL-001	Edit Delete

- 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

Security and Scalability



KEYCLOAK ENTERPRISE
AUTHENTICATION



CONTAINERIZED
ARCHITECTURE (SCALES
EASILY)



DATABASE HEALTH CHECKS

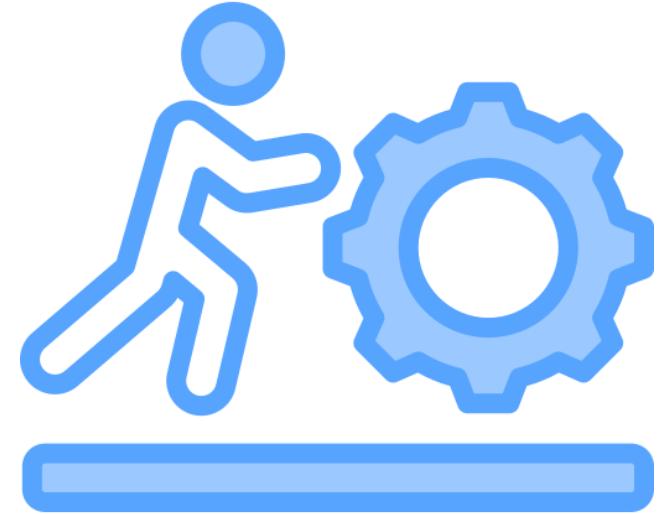


AUDIT LOGGING FOR
COMPLIANCE

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)



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

Public IP for live demo

4.235.120.134