Project Case Study: Full-Stack Pallet Management Web Application

My Role: Lead Full-Stack Developer (Final Year Internship)

Project Overview

This application was developed as a real-world solution during my final year internship at Ménara Holding. The goal was to build a complete, production-ready system to track and manage company pallets efficiently. I was responsible for the entire technical execution of the project, from initial concept and system architecture to the final deployment. The application successfully solved a key business need by replacing a manual process with a secure, scalable, and user-friendly digital solution.
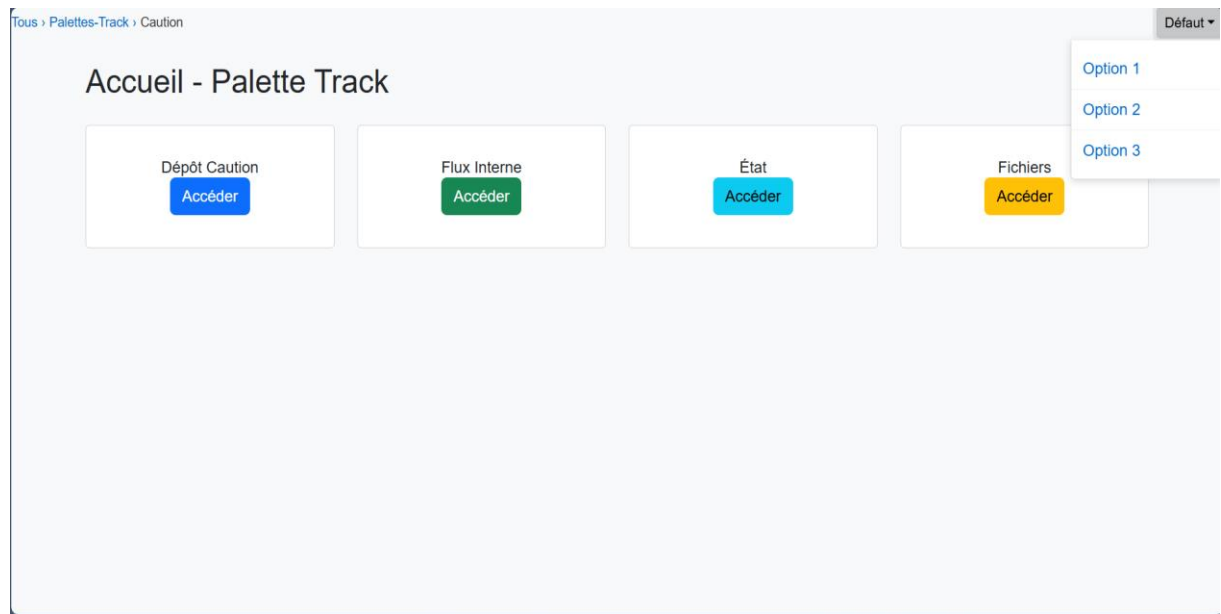
My Key Responsibilities

- **System Architecture:** Designed the complete application structure, including the database schema and the overall technical workflow.

- **Backend Development:** Built a robust and secure REST API from scratch using **PHP** and the **Laravel** framework to handle all business logic and data operations.

- **Frontend Development:** Developed a dynamic and responsive user interface using **React.js**, creating reusable components to ensure a fast and intuitive user experience.

- **Database Management:** Implemented and managed the **MySQL** database, ensuring data integrity and efficient querying.

- **Code Quality & Version Control:** Maintained a high standard of code quality through best practices and managed the project's source code using **Git** and **GitHub**.

Technologies Used

- **Backend:** PHP, Laravel, REST API

- **Frontend:** React.js, JavaScript, HTML5, CSS3

- **Database:** MySQL

- **Tools & Concepts:** Docker, Git, GitHub, Visual Studio Code

Project Visuals

Developed Features

Accueil - Palette Track

Dépôt Caution	Flux Interne	État	Fichiers
Accéder	**Accéder**	**Accéder**	**Accéder**

Option 1
Option 2
Option 3

Deposit Management Module

Palettes-Track

Super administrator   Super administrateur   PLT

Tous › Palettes-Track › Caution   Défaut ▾

Derniers lus

Caution	Site	Client	Raison	CIN	Date	Montant	Validée
CT202250709-0004	202	CGP78813	Reda Amine	T4444	09/07/2025	2 000,00	Non
CT202250708-0003	202	CGP78810	Fatima Zahra	T3333	09/07/2025	900,00	Oui
CT202250708-0002	202	CGP78807	Mohamed Aarab	T2222	09/07/2025	500,00	Oui
CT202250708-0001	202	CGP78807	Mohamed Aarab	T1111	09/07/2025	500,00	Oui

Dépôt de Caution   Validation

◇ **Général**

Caution	
Site *	202
Client *	CGP78813
Raison sociale	Reda Amine
CIN *	T4444
Date	09/07/2025
Heure	10:01
Validée	Non

Lignes

Montant *	2000

Features Implemented:

- Insertion, modification, and deletion of deposits

- Validation of deposits

- PDF Generation

Consignment Module

Features Implemented:

- Insertion, modification, and deletion of consignments

- Verification of sufficient balance

- Validation of quantities

- Validation of consignments

- PDF Generation

Deconsignment Module

Features Implemented:

- Entering pallet returns

- Validation of deconsignments

- Availability checks

- Automatic balance updates

Deposit Refund Module

- **Features Implemented:**

  - Validation of available balance

  - Partial or total deposit refund

  - Automatic balance updates

  - Generation of PDF refund

PDF Document Generation

Balance Calculation System

- **Features:**

  - Automatic real-time recalculation

  - Application of the business formula

  - Movement history

  - Consistency alerts

Testing and Validation

Technical Tests

- Integration Tests: Fully tested API

- Load Tests: Optimal performance

User Tests

- Validation with operators

- Successful acceptance tests

- Training of end-users

Results Obtained

- **Quantifiable Gains:**

  - Reduced processing time

  - Elimination of calculation errors

  - Improved productivity

- **Qualitative Improvements:**

  - Complete traceability of operations

  - High user satisfaction

  - Standardized processes

Challenges and Solutions

- **Challenges Encountered:**

  - Complexity of business rules

  - Integration with existing systems

- **Solutions Implemented:**

  - Detailed documentation of rules

  - Modular and flexible architecture

  - Progressive training and support

Conclusion

The implementation of the system successfully achieved all the set objectives. The developed features meet the identified needs, and the results confirm the positive impact on the organization.