# DESIGN AND MODELING OF A DIGITAL EVENT REGISTRATION AND TICKETING PLATFORM

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## Introduction

Modern event ticketing ecosystems remain fragmented: many solutions provide partial functionality, require manual reconciliation, and lack robust, auditable controls for inventory and payments. Prior systems partially address discovery and checkout but often fail to guarantee real-time stock consistency, secure payment reconciliation, and clear administrative traceability. The principal challenges are (1) preventing oversell under concurrency, (2) ensuring reliable payment confirmation and state transitions, and (3) maintaining an auditable order lifecycle suitable for administrative operations.

## Goal

Design and model a scalable architecture for an online event ticketing platform that connects organizers, buyers, and administrators in a secure and efficient ecosystem.

## Proposed Solution

We propose a modular platform with a single, compact core: a Platform / API + Core Services container that hosts Event Management, Ticketing & Inventory (with reservation holds), and Order Service, the platform persists data to a primary database and uses external payment and email services. The design enforces atomic order state transitions (commit on confirmed payment), background ticket issuance (PDF + QR3

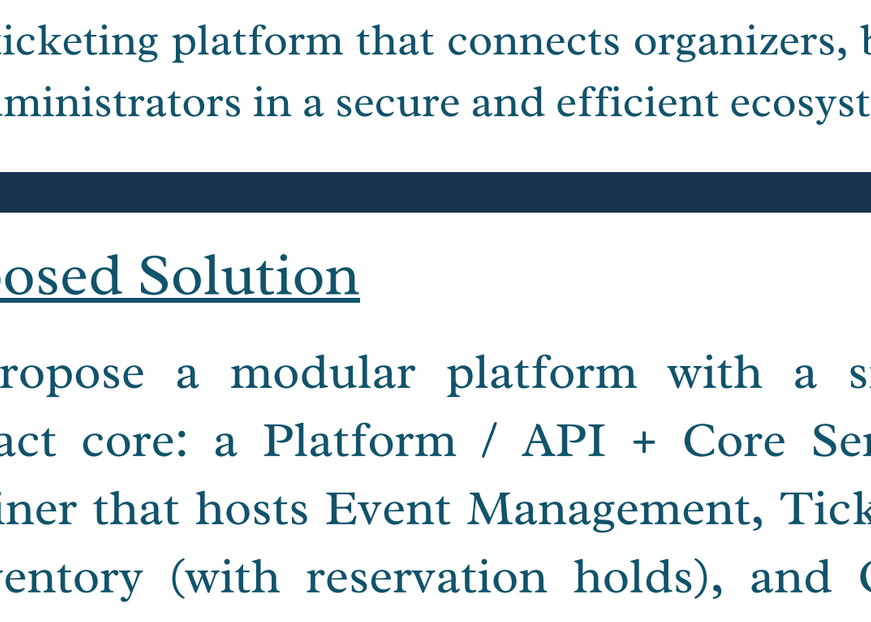


Fig 1. Proposed Architecture

## Experiments

To validate the design, we iteratively modeled, tested, and refined the system architecture and flows. Each stage improved clarity, structure, and consistency across diagrams.

| Activity | Objective | Output |
|---|---|---|
| MVP Definition | Establish basic ticket purchase workflow | Initial user flow |
| Class Modeling | Define data entities and relationships | Class Diagram |
| Process Mapping | Describe purchase logic and constraints | BPMN Diagram |
| UI Mockups | Validate usability and visual flow | Homepage, Checkout |
| Consistency Review | Ensure alignment across models | Unified architecture vision |

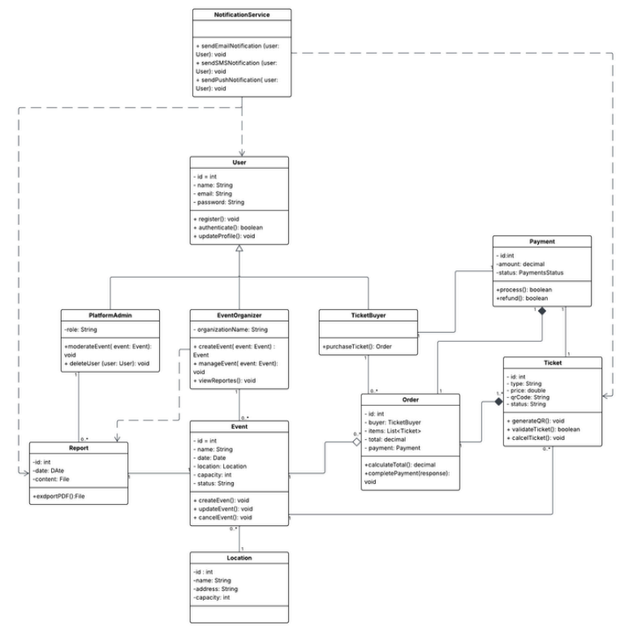


Fig 3. Main domain classes and relationships.

## Results

Key outcomes include the simplified modular architecture, business process modeling, and validated interface designs.

The system ensures:

- Reliable transactions via temporary ticket holds and atomic commits.
- Scalable structure for future integrations.

## Conclusions

- The proposed architecture offers a consistent and scalable foundation for a digital ticketing platform.
- It successfully integrates user experience, reliability, and business logic under a modular structure.
- Future iterations will focus on prototype deployment, secure payments, and performance testing.

## References

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