



Digital Egypt Pioneers Initiative

Full stack .Net Web Developer - CAI2_SWD5_S7

Event planning and ticketing system

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1. Project planning and Management

1.1 Project Overview

The Event Planning & Ticketing System is a web-based platform designed to simplify event management, attendee registration, and vendor coordination while ensuring secure transactions through third-party payment integrations. It allows event organizers to create and manage events, attendees to register and buy tickets, and vendors to participate by offering services at events. The system follows Domain-Driven Design (DDD) to create a scalable and maintainable architecture.

1.2 Objectives

- **Efficient Event Management:** Enable organizers to seamlessly create, manage, and track events, ensuring a streamlined planning process.
- **User-Friendly Attendee Registration:** Allow attendees to browse, register, and purchase tickets effortlessly, enhancing user experience.
- **Vendor Management System:** Facilitate vendor applications, approvals, and service management, ensuring smooth collaboration with event organizers.
- **Secure & Scalable Payment Integration:** Ensure fast, secure, and seamless transactions using Stripe & PayPal, with support for high-traffic demand.
- **Automated Ticketing System with QR Code Validation:** Generate QR-coded digital tickets for secure, automated verification and access control.
- **Real-Time Event Analytics & Reporting:** Provide live insights into ticket sales, revenue, and attendee engagement for data-driven decision-making.
- **High Performance & Scalability:** Optimize the system to handle large-scale events while ensuring fast response times and reliability.

1.3 Project scope

In-Scope Features:

- Event Creation & Management:
Organizers can add, update, and manage events.
- Ticket Sales & QR-Based Entry:
Automated ticketing system with QR validation.
- Attendee Registration & Authentication:
Secure login and ticket booking process.
- Vendor Management System:
Vendors can apply, get approved, and offer services.
- Payment Integration:
Support for Stripe & PayPal for secure transactions.
- Admin Dashboard & Reports:
System-wide monitoring for better decision-making.
- Notification System:
Email & SMS alerts for event updates and ticket confirmations.

Out of Scope (Future Enhancements)

- AI-Powered Event Recommendations: Personalized event suggestions.
- Augmented Reality (AR) Venue Navigation: Interactive maps for attendees.
- Multi-Currency & Regional Payment Support: Expanding payment options worldwide.
- Native Mobile App (iOS/Android): A mobile-friendly version of the platform.

3.Requirements gathering

3.1 Stakeholder Analysis

1) Attendees

- Easy registration & ticket purchase
- Secure payment & refunds
- Event search & filtering
- QR code-based ticket access

2) Event Organizers

- Event creation & customization
- Ticket sales tracking & analytics
- Vendor management
- Attendee engagement tools

3) Vendors

- Simple registration & approval process
- Easy management of services/products
- Direct communication with organizers

4) Admins

- User & event approval management
- Payment & refund monitoring
- Security & compliance enforcement

5) Payment providers

- Secure transaction processing
- Fraud prevention
- Compliance with financial regulations

3.2 User stories and use case

◆ User Stories (Examples)

- As an attendee, I want to browse events based on date and category, so I can find interesting events.
- As an attendee, I want to purchase a ticket online, so I can attend an event without hassle.

- As an organizer, I want to create an event and set ticket prices, so I can start selling tickets.
- As a vendor, I want to apply to offer services at an event, so I can participate and sell products.
- As an admin, I want to approve or reject new event listings, so only valid events are displayed.

◆ Use Case Diagram

3.3 Functional requirements

1. User Registration & Authentication

Secure signup/login for attendees, organizers, vendors

2. Event Creation & Management

Organizers can create, edit, and manage events

3. Ticket Sales & QR Code Generation

Attendees can purchase tickets and receive QR codes for entry

4. Vendor Registration & Approval

Vendors can apply, upload documents, and get approved

5. Secure Payment Processing

Integrated payment gateways (Stripe, PayPal) for transactions

6. Event Search & Filtering

Users can find events based on date, location, category

7. Admin Dashboard

Manage users, events, payments, and analytics

8. Notifications & Alerts

Email & SMS notifications for ticket purchases, event updates

3.4 Non-Functional requirements

1 Performance & Scalability

- The system must handle 1000+ concurrent users without performance degradation.
- Page loading time should be less than 3 seconds for optimal user experience.

2 Security Requirements

- Data encryption (SSL/TLS) for secure transactions.
- Implement OAuth 2.0 / JWT-based authentication for user security.

- Role-based access control (RBAC) to prevent unauthorized access.

3 Usability & Accessibility

- The platform should be mobile-friendly and responsive.
- Follow WCAG 2.1 accessibility guidelines for inclusive design.

4 Reliability & Availability

- Ensure 99.9% system uptime with proper server and database backups.
- Automated error logging for real-time issue tracking.

4. System Analysis and design

4.1 Problem definition

Managing events, ticket sales, and vendor coordination is often complex and inefficient. Many existing event management platforms lack seamless integration of attendee registration, vendor participation, and real-time analytics. Additionally, issues like fraudulent tickets, slow payment processing, and limited scalability create challenges for event organizers.

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Use case

Use case descriptions

- **Register & login (Attendee, Organizer, Vendor, Admin):**
Users create an account and log in securely.

- **Create & Manage events (Organizer):**
Organizers can add event details, set ticket prices, and manage registrations.
- **Purchase tickets (Attendee):**
Users browse events, purchase tickets, and receive QR codes.
- **Validate tickets (QR Scan):**
Organizers scan QR codes at the event entrance to validate tickets.
- **Apply as vendor (vendor):**
Vendors submit applications to participate in events.
- **Approve/Reject vendors (Organizer):**
Organizers approve or reject vendor applications.
- **Process payments (payment gateway):**
To handles secure transactions.

Functional requirements

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Users can find events based on date, location, category
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Manage users, events, payments, and analytics
8. **Notifications & Alerts**
Email & SMS notifications for ticket purchases, event updates

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Software architecture

- **Frontend**

User-facing interfaces for attendees, organizers, and vendors.
Responsive UI design for web and mobile.

- **Backend**

Handles event creation, ticketing, user authentication, and notifications.
Uses RESTful APIs for communication.

- **Database**

Stores user data, events, ticket purchases, and vendor applications.

- **Payment Gateway**

Manages secure transactions and refunds.

- **Admin Dashboard**

Provides insights into ticket sales, user activity, and reports.