Universidad Distrital Francisco José de Caldas

Dept. of Computer Engineering

Systems Engineerings

Workshop 1

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1 Introduction

Event management has become increasingly complex due to the growing demand for conferences, workshops, concerts, and professional networking activities. Traditional event planning methods often involve manual processes such as paper registrations, physical ticket sales, and fragmented communication, which are inefficient and error-prone. Digital transformation offers the opportunity to create platforms that automate registration, simplify payment processes, and improve the overall experience for both organizers and attendees.

This project proposes the design of an Event Management Application that allows organizers to publish and manage events while attendees can easily register, pay, and receive timely updates. By applying software engineering practices, we aim to define a solid business model, user requirements, and initial design artifacts that will guide the development process.

See the workshop website for more instructions:
Pendiente repositorio

1.1 Problem Description

Currently, many event organizers face challenges in managing registrations, tracking attendees, and processing payments efficiently. Attendees, on the other hand, often struggle with limited access to event information, lack of reminders, and insecure or slow payment options.

These difficulties result in the following.

- Lost revenue due to inefficient registration systems.
- Lost revenue due to inefficient registration systems.
- Poor communication between organizers and attendees.
- Limited visibility of events for potential participants.
- Increased operational costs and errors for organizers.

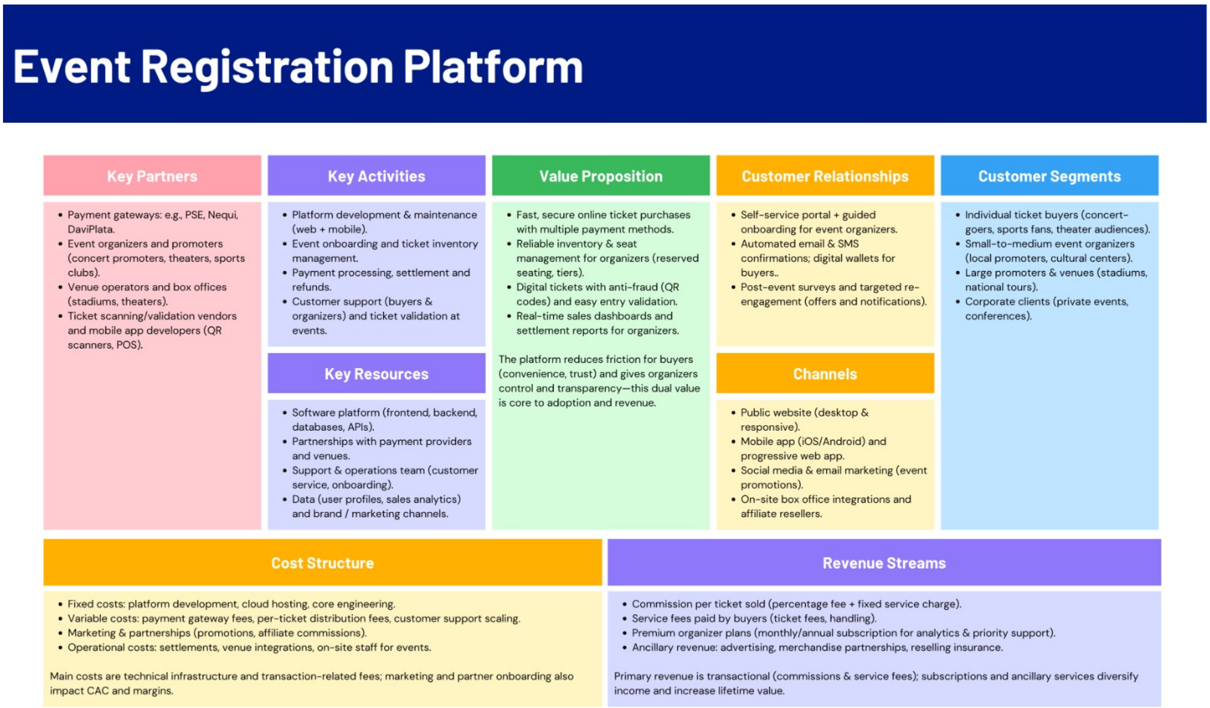
Therefore, a centralized, digital and user-friendly platform is needed that can streamline the end-to-end event management process.

1.2 General Objective

To design and define a digital event management platform that streamlines the organization and participation process by providing organizers with efficient tools for event creation and tracking, and offering attendees a simple, secure, and user-friendly system for registration, payment, and notifications.

2 Model canvas

The Business Canvas is a fundamental strategic tool that allows us to fully and concisely visualize the nine fundamental pillars of a business. In the context of this event management platform, the Canvas helps us clearly define the value proposition offered to users, identify target customer segments, establish key relationships with these customers, and determine the channels of interaction. It also details the activities and resources essential to operations, the strategic partners that contribute to the ecosystem, and, crucially, the cost structure and revenue streams that support the project's economic viability. This holistic view ensures that the technological architecture is directly aligned with the business objectives and strategy.



Event Registration Platform

Key Partners

- Payment gateways: e.g., PSE, Nequi, DaviPlata.
- Event organizers and promoters (concert promoters, theaters, sports clubs).
- Venue operators and box offices (stadiums, theaters).
- Ticket scanning/validation vendors and mobile app developers (QR scanners, POS).

Key Activities

- Platform development & maintenance (web + mobile).
- Event onboarding and ticket inventory management.
- Payment processing, settlement and refunds.
- Customer support (buyers & organizers) and ticket validation at events.

Key Resources

- Software platform (frontend, backend, databases, APIs).
- Partnerships with payment providers and venues.
- Support & operations team (customer service, onboarding).
- Data (user profiles, sales analytics) and brand / marketing channels.

Value Proposition

- Fast, secure online ticket purchases with multiple payment methods.
- Reliable inventory & seat management for organizers (reserved seating, tiers).
- Digital tickets with anti-fraud (QR codes) and easy entry validation.
- Real-time sales dashboards and settlement reports for organizers.

The platform reduces friction for buyers (convenience, trust) and gives organizers control and transparency—this dual value is core to adoption and revenue.

Customer Relationships

- Self-service portal + guided onboarding for event organizers.
- Automated email & SMS confirmations; digital wallets for buyers..
- Post-event surveys and targeted re-engagement (offers and notifications).

Channels

- Public website (desktop & responsive).
- Mobile app (iOS/Android) and progressive web app.
- Social media & email marketing (event promotions).
- On-site box office integrations and affiliate resellers.

Customer Segments

- Individual ticket buyers (concert-goers, sports fans, theater audiences).
- Small-to-medium event organizers (local promoters, cultural centers).
- Large promoters & venues (stadiums, national tours).
- Corporate clients (private events, conferences).

Cost Structure

- Fixed costs: platform development, cloud hosting, core engineering.
- Variable costs: payment gateway fees, per-ticket distribution fees, customer support scaling.
- Marketing & partnerships (promotions, affiliate commissions).
- Operational costs: settlements, venue integrations, on-site staff for events.

Main costs are technical infrastructure and transaction-related fees; marketing and partner onboarding also impact CAC and margins.

Revenue Streams

- Commission per ticket sold (percentage fee + fixed service charge).
- Service fees paid by buyers (ticket fees, handling).
- Premium organizer plans (monthly/annual subscription for analytics & priority support).
- Ancillary revenue: advertising, merchandise partnerships, reselling insurance.

Primary revenue is transactional (commissions & service fees); subscriptions and ancillary services diversify income and increase lifetime value.

Figure 1: Business model canvas

3 User stories

User Stories are an agile tool that allows us to understand and document system functionalities from the perspective of the different actors who will interact with it. Each story is formulated in a simple and concise manner, following the format ”As [role], I want [action], so that [benefit].” This allows us to capture the specific needs of buyers, sellers, administrators, and other roles, ensuring that development focuses on delivering real value to each type of user. Additionally, each story includes detailed acceptance criteria that define when a feature is considered complete and correct, facilitating its validation. This user-centered approach is vital to building an intuitive platform that truly solves its users' problems and desires.

3.1 Role: Event Organizer

Title: Create and Publish a New Event	**Priority:** High	**Estimate:** Large

User Story:
As an **Event Organizer**, I want to **create and publish a new event with detailed information, seating types, and prices**, so that **I can make it available for ticket buyers on the platform**.

Acceptance Criteria:
Given I am logged in as an ”Event Organizer”,
When I navigate to the ”Create Event” page, fill in all mandatory fields, define at least two ticket tiers, and click the ”Publish” button,
Then the event is assigned a unique URL, becomes publicly visible, and its tickets are available for purchase.

Title: View Real-Time Sales Dashboard	**Priority:** High	**Estimate:** Medium

User Story:
As an **Event Organizer**, I want to **view a real-time sales dashboard for my event**, so that **I can track ticket sales and revenue**.

Acceptance Criteria:
Given I am logged in as an ”Event Organizer” and am viewing one of my active events,
When I click on the ”Dashboard” or ”Reports” tab,
Then the system displays the total number of tickets sold per tier and the total gross revenue, updated in near real-time.

3.2 Role: Ticket Buyer

Title: Purchase Event Ticket Securely	**Priority:** High	**Estimate:** Large

User Story:
As a **Ticket Buyer**, I want to **select tickets for an event and complete the purchase securely**, so that **I can receive a valid digital ticket to attend**.

Acceptance Criteria:
Given I am viewing the page for an event with available tickets,
When I select my tickets, proceed to checkout, and confirm the mock payment,
Then I am redirected to a confirmation page and receive an email with the digital tickets as a PDF with a unique QR code.

Title: Browse and Discover Events	**Priority:** High	**Estimate:** Medium

User Story:
As a **Ticket Buyer**, I want to **search for events by name, date, or category**, so that **I can easily find events I’m interested in**.

Acceptance Criteria:
Given I am on the homepage,
When I use the search bar or apply a category filter,
Then the search results page displays only the events that match my criteria.

3.3 Role: Platform Admin

Title: Suspend User Account	**Priority:** Medium	**Estimate:** Medium

User Story:
As a **Platform Admin**, I want to **suspend an Event Organizer's account**, so that **I can prevent fraudulent or harmful activity on the platform**.

Acceptance Criteria:
Given I am logged in as a ”Platform Admin” and am viewing a specific organizer's profile,
When I click the ”Suspend Account” button and confirm my action,
Then the organizer's account is marked as suspended, they can no longer log in, and all their published events are unpublished.

4 User Story Mapping

User Story Mapping is a software engineering technique used to **visualize, organize, and prioritize** product functionalities from the user's perspective. Its main goal is to understand how different user roles interact with the system and what steps they follow to achieve their objectives, dividing this journey into *epics (big activities)*, *features (specific actions)*, and *releases (incremental versions)* of the product.

In our project, which consists of an **event ticketing and management platform**, we used this approach to represent the entire system flow—from event creation to ticket purchase and monitoring.

We identified three main **user personas**:

- **Event Organizer:** creates and publishes events, defines ticket prices, and tracks sales.
- **Ticket Buyer:** searches for events, selects, and purchases tickets securely.
- **Platform Admin:** supervises the platform, manages accounts, and prevents fraud.

From these personas, we defined the following main **epics**:

1. **Account Management:** sign up, login, and profile management.
2. **Event Creation & Publishing:** create events, define ticket tiers, and publish them.
3. **Event Discovery:** search and filter available events.
4. **Ticket Selection & Purchase:** select ticket type and quantity, checkout, and payment.
5. **Monitoring & Administration:** sales dashboard and account control.

Each epic was broken down into **features** with detailed functionalities (for example, under “Ticket Purchase” we included *Select Tickets*, *Checkout*, and *Payment*), and every feature included enhancements distributed by **releases** (MVP, improvements, and future versions).

The result was a clear and organized **visual User Story Map** showing how the product evolves, which features are prioritized, and how each user gains value throughout the process. This mapping helped us plan development iterations efficiently and maintain a user-centered vision of the system's evolution.

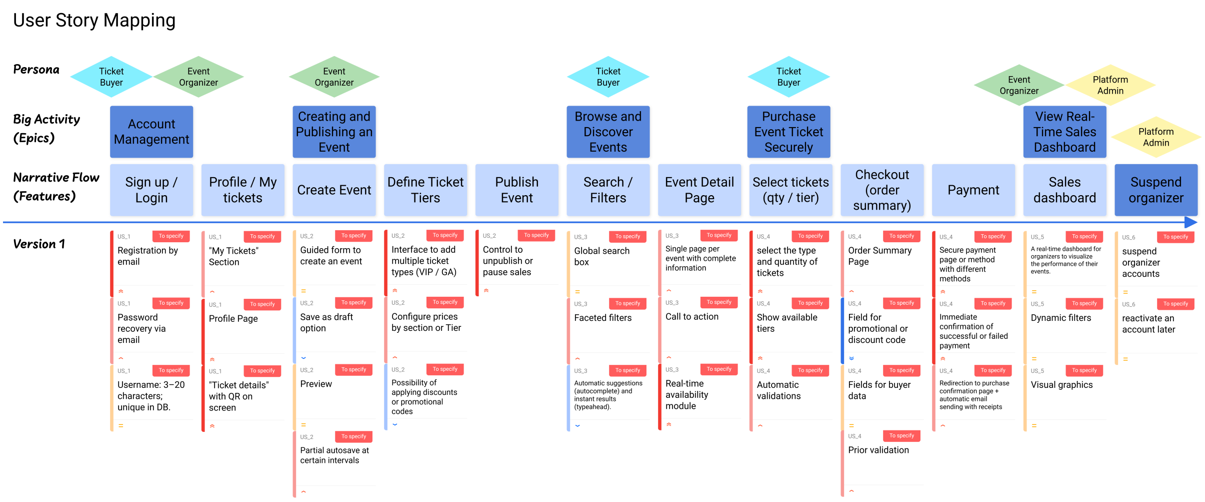

User Story Mapping
Persona
Big Activity (Epics)
Narrative Flow (Features)
Version 1
Ticket Buyer
Event Organizer
Account Management
Sign up / Login
US_1 To specify Registration by email
US_1 To specify Password recovery via email
US_1 To specify Username: 3–20 characters; unique in DB.
Profile / My tickets
US_1 To specify "My Tickets" Section
US_1 To specify Profile Page
US_1 To specify "Ticket details" with QR on screen
Event Organizer
Creating and Publishing an Event
Create Event
US_2 To specify Guided form to create an event
US_2 To specify Save as draft option
US_2 To specify Preview
US_2 To specify Partial autosave at certain intervals
Define Ticket Tiers
US_2 To specify Interface to add multiple ticket types (VIP / GA)
US_2 To specify Configure prices by section or Tier
US_2 To specify Possibility of applying discounts or promotional codes
Publish Event
US_2 To specify Control to unpublish or pause sales
Ticket Buyer
Browse and Discover Events
Search / Filters
US_3 To specify Global search box
US_3 To specify Faceted filters
US_3 To specify Automatic suggestions (autocomplete) and instant results (typeahead).
Event Detail Page
US_3 To specify Single page per event with complete information
US_3 To specify Call to action
US_3 To specify Real-time availability module
Ticket Buyer
Purchase Event Ticket Securely
Select tickets (qty / tier)
US_4 To specify select the type and quantity of tickets
US_4 To specify Show available tiers
US_4 To specify Automatic validations
Checkout (order summary)
US_4 To specify Order Summary Page
US_4 To specify Field for promotional or discount code
US_4 To specify Fields for buyer data
US_4 To specify Prior validation
Payment
US_4 To specify Secure payment page or method with different methods
US_4 To specify Immediate confirmation of successful or failed payment
US_4 To specify Redirection to purchase confirmation page + automatic email sending with receipts
Event Organizer
Platform Admin
View Real-Time Sales Dashboard
Sales dashboard
US_5 To specify A real-time dashboard for organizers to visualize the performance of their events.
US_5 To specify Dynamic filters
US_5 To specify Visual graphics
Platform Admin
Suspend organizer
US_6 To specify suspend organizer accounts
US_6 To specify reactivate an account later

Figure 2: User Story Mapping

5 CRC Cards

In the context of the Event Registration Platform, the CRC (Class–Responsibility–Collaborator) cards provide an early object-oriented design view of the system. Each CRC card represents a fundamental class that defines specific responsibilities and its interactions with other components (collaborators).

For this project, the main domain entities are **Event**, **User**, and **Ticket**, which together model the core business logic of the platform:

- **Event:** Represents each published event, containing details such as venue, date, capacity, and ticket categories. It is responsible for managing seat availability, linking organizers, and associating attendees.
- **User:** Manages all user-related data and behaviors, including authentication, profile management, and role differentiation (Organizer, Buyer, Admin).
- **Ticket:** Represents individual purchases made by buyers, stores ticket data, generates digital codes (PDF / QR), and validates entries during check-in.

These three classes collaborate with supporting services such as PaymentService and NotificationService to ensure seamless payment processing and automated communication. The following CRC cards summarize the structure and interactions among these core components, providing a conceptual foundation for future class diagrams and implementation.

5.1 Class: Event

Class: Event	
Responsibility	**Collaborator**
• Store event details (name, date, venue) • Manage ticket sections/types (e.g., VIP, GA). • Track event capacity and remaining inventory. • Manage seat availability and pricing • Track ticket sales and performance • Manage event status (Draft, Published, Sold Out, Cancelled).	• User (Organizer) • Ticket • PaymentService • NotificationService

Table 1: CRC Card — Event Class

5.2 Class: User

Class: User	
Responsibility	**Collaborator**
• Register and authenticate into the platform • Manage personal profile and preferences • Create or purchase tickets depending on role • Receive notifications and confirmations • Maintain payment and contact information	• Event • Ticket • PaymentService • NotificationService

Table 2: CRC Card — User Class

5.3 Class: Ticket

Class: Ticket	
Responsibility	**Collaborator**
• Store ticket details (seat, price, QR code) • Generate digital ticket (PDF/QR) • Validate ticket at check-in • Associate ticket with buyer and event • Record payment status	• User (Buyer) • Event • PaymentService • NotificationService

Table 3: CRC Card — Ticket Class