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Eventify – Event Management System

Prof V. N. Sawant[1], Ms. Vaishnavi Bhalerao[2], Mr. Shubham Dukare[3], Ms. Komal Deshmukh[4], Ms. Anamika Bhavsar[5]
Professor, Department of Computer Engineering[1]
Students, Department of Computer Engineering[2-5]
NBN Sinhgad Technical Institute Campus, Pune, India

Abstract: *A detailed Event Management system offers an innovative way to simplify the process of organizing events by removing traditional intermediaries. This research paper introduces a novel application that establishes direct connections between event hosts and professional planners through a role-based access control system. The study examines the implementation of a three-tier architecture involving administrators, organizers, and users, integrating advanced features such as dynamic QR-based access control, automated guest management, and machine learning-driven event recommendations. The application includes semantic analysis for organizer evaluations, automated budget calculation functionalities, and real-time task tracking capabilities. Our findings demonstrate the system's effectiveness in managing both large-scale corporate events and intimate private gatherings due to its extensive feature set. The research highlights the application's success in reducing the complexity of event planning while ensuring security through appropriate verification and authorization measures. Results indicate significant improvements in event planning efficiency and user satisfaction through the adoption of digital notification systems and intelligent event suggestions.*

Keywords: Event Management System, Role-Based Access Control, Semantic Analysis, Dynamic QR

I. INTRODUCTION

In the contemporary fast-paced environment, event management has transformed from basic coordination of gatherings to a sophisticated arrangement of numerous services, vendors, and logistics. The conventional method of event planning typically involves many in-person meetings, numerous phone calls, and a lot of paperwork, resulting in inefficiencies and gaps in communication among stakeholders. As digital transformation reshapes different industries, the event management field finds itself at a pivotal moment where automation and streamlined processes have become essential rather than optional.

Recent research shows that event planners spend about 60% of their time coordinating with various stakeholders instead of concentrating on the creative and strategic elements of event planning. Although digital platforms have emerged to tackle these issues, most current solutions either concentrate exclusively on ticketing or offer fragmented services that still necessitate considerable manual intervention.

Our study seeks to overcome these challenges by proposing a comprehensive event management system that fundamentally changes the traditional methodology. This new system removes the need for intermediaries by establishing a direct digital connection between event hosts and professional planners. It utilizes advanced technologies like machine learning for tailored recommendations, semantic analysis for authentic organizer ratings, and dynamic QR-based access control to enhance security.

The foundation of our system's security and operational efficiency is built on Role-Based Access Control (RBAC). The RBAC framework clearly defines system access and capabilities across three distinct user roles. Administrators have complete oversight of the system, including user authentication, authorization management, and data monitoring. Event organizers are provided with specialized tools for managing pricing, scheduling events, tracking tasks, and communicating with clients. End users are given an easy-to-navigate interface for planning events, choosing organizers, and calculating budgets, ensuring a smooth experience that meets their individual needs.

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The system's recommendation feature employs advanced machine learning algorithms to analyze user preferences, event history, and behavioural trends. This intelligent platform suggests appropriate event organizers based on criteria such as event type, budget limitations, and previous performance ratings. Additionally, it recommends relevant live events to users based on their interests and previous attendance records, creating a personalized discovery journey.

A standout feature of our platform is the automated invitation and guest management system. This all-encompassing solution produces digital invitations, manages guest RSVPs, and generates dynamic QR-coded tickets that control access to various areas of the event. The system automatically sends out invitations and tickets through various channels, including email and WhatsApp, while continuously updating guest lists and tracking attendance. This level of automation greatly diminishes the manual effort typically required for guest management and event access control.

Moreover, the integration of automated budget calculations, task tracking, and guest communication capabilities addresses crucial challenges faced in modern event planning. This research introduces a groundbreaking approach to event management that meets the rising demand for efficient, transparent, and user-friendly digital solutions in today's event planning landscape.

II. SYSTEM ARCHITECTURE AND RESEARCH METHODOLOGY

2.1 RESEARCH METHODOLOGY

2.1.1 Stakeholder Requirement Assessment

Initial project efforts concentrated on extracting and documenting critical requirements from three core user segments that interact with the system.

Attendees and Hosts (individuals participating in and creating events).

Event Management Teams (businesses and professionals offering venue and planning expertise).

Platform Administrators (technical overseers with complete system control).

2.1.2 Framework Development and Architecture

- Interaction Scenario Mapping: We developed comprehensive scenarios depicting the relationships between participants, facilitators, and system processes throughout the event lifecycle.
- Permission-Based Authorization Framework: We implemented a structured authorization model that assigns specific capabilities to each user category based on their designated role.

2.1.3 Technical Infrastructure Selection

- User Interface Framework: Developed with Flutter framework for cross-platform compatibility and accelerated development workflow.
- Server Architecture: Deployed Firebase services for backend operations including real-time data synchronization, cloud-based functions, and user verification systems.
- Data Management: Implemented dual-storage architecture with cloud-hosted Firestore for real-time synchronization and embedded SQFLite database for offline access.
- Digital Identification System: Incorporated specialized libraries for dynamic encoded visual identifier generation.
- External Communication Channels: Developed integrated notification framework supporting both instant messaging and email delivery for event communications.
- Feedback Intelligence: Deployed computational linguistics tools via Python frameworks to process and derive insights from participant evaluations.

2.1.4 Implementation Process and Evaluation

- Iterative Development Strategy: Employed structured sprint cycles consisting of planning, development, testing, and stakeholder review phases.

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- Conceptual Design Validation: Created simplified interface mockups for early stakeholder feedback before detailed implementation.
- Component Reliability Assessment: Conducted isolated testing of critical system components including ticketing mechanisms, visual identifier creation, sentiment analysis algorithms, and task management functions.
- End-User Validation: Engaged a representative subset of target users to verify system usability, interface intuitiveness, and communication effectiveness.

III. SYSTEM ARCHITECTURE

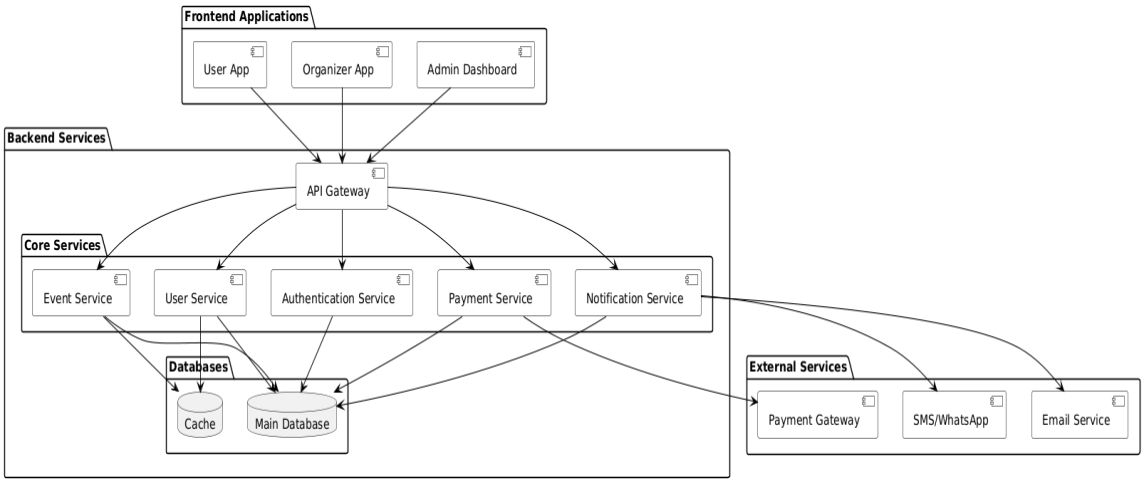

Fig. 2.2 System Architecture

IV. RESULTS

1. Tiered Permission Structure Achievement

- Deployed differentiated functionality levels across Platform Supervisor, Regular Member, and Event Manager classifications.
- Oversight functions implemented for user authentication, content monitoring, and system governance.

2. Complete Project Coordination Sequence

- Coordinators now able to gather client requirements, create task schedules, and record completion statuses.
- Task advancement tracking visible simultaneously to both coordinators and clients.

3. Real-time Reservation Framework Deployment

- Members enabled to view and secure attendance at public gatherings (performances, cultural celebrations).
- Confirmation receipts delivered through digital channels with in-platform accessibility options.

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SNAPSHOTS

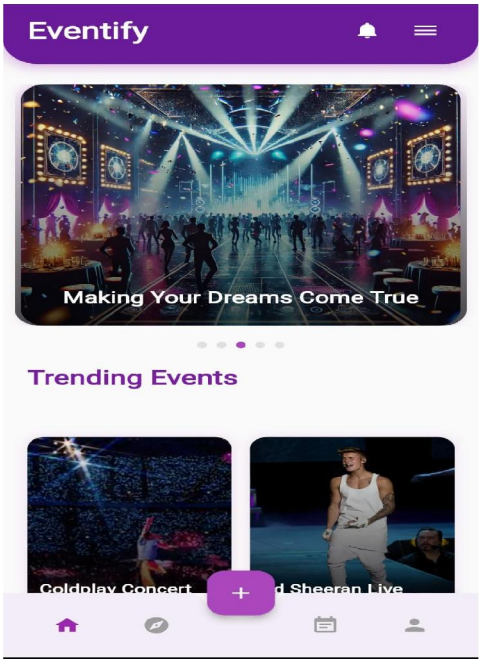

Fig. 3.1 Home Page

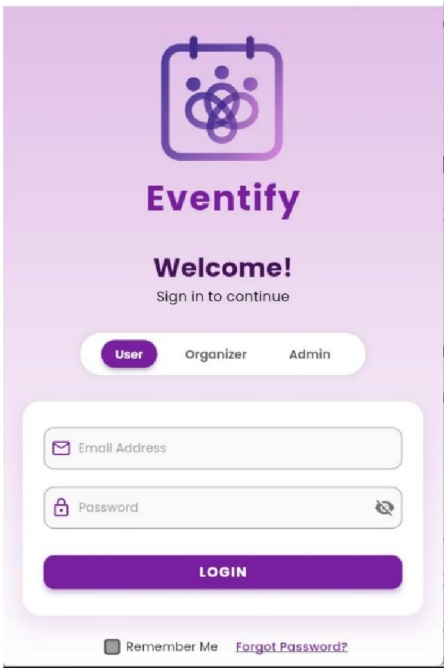

Fig. 3.2 Login Page

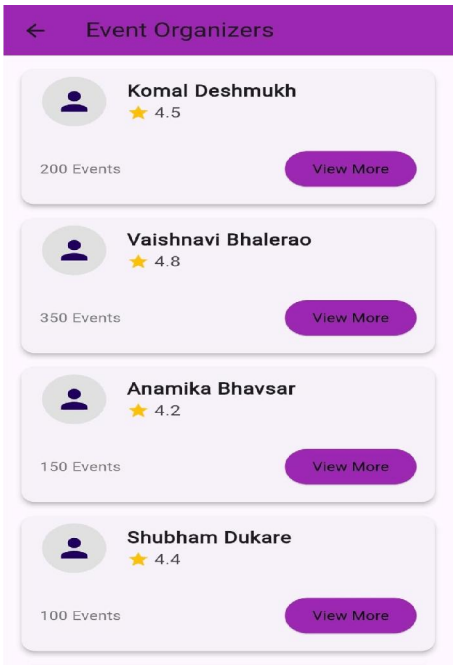

Fig 3.3 Organizer List

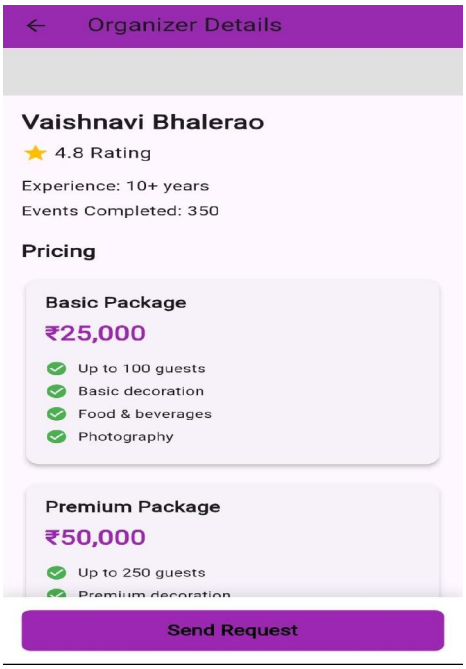

Fig 3.4 Organizer Details

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V. CONCLUSION

The proposed event management system marks a notable improvement in the efficiency of event planning and execution. It provides a comprehensive platform that connects users, organizers, and administrators with role-specific access controls. By incorporating features like direct communication, customizable planning tools, automated guest management, real-time task monitoring, and a thorough review system, the platform tackles major challenges in the industry, boosting both efficiency and user satisfaction across various types of events. Looking ahead, the system's modular design is well-suited for the integration of new technologies, such as artificial intelligence for predictive analytics, virtual and augmented reality for enriched event experiences, blockchain for safe ticketing, Internet of Things (IoT) for real-time management, and advanced analytics for informed decision-making. Future enhancements could also prioritize features related to sustainability, personalization through machine learning, improved security, smart city integration, and greater accessibility.

ACKNOWLEDGMENT

It gives us immense pleasure and satisfaction to present our project, “Eventify-Event Management System with Role-Based Access and Intelligent Automation,” developed as a part of our academic journey.

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