Intelligent Seat Booking System
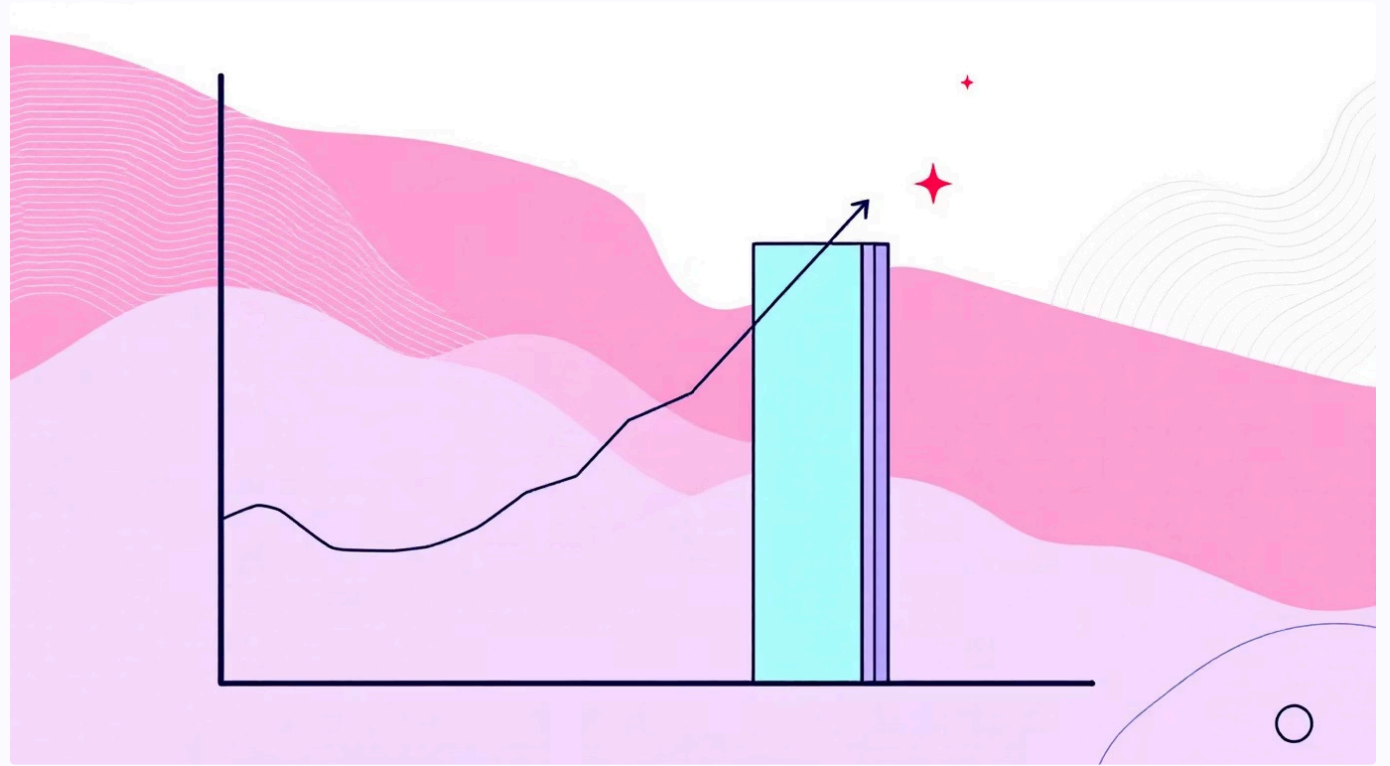
Maximizing Office Space Utilization with Smart Scheduling

Navigating Limited Office Space

With a distributed workforce of 80 employees across 10 teams, our 50-seat office faces significant scheduling complexities. Daily capacity is limited to 40 employees, leading to inefficiencies and conflicts with manual booking systems.

- Limited Physical Space (50 seats)
- High Demand (80 employees)
- Daily Capacity Constraints (40 employees)
- Inefficient Manual Booking

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Smart Scheduling for Modern Workspaces

AI-Driven Allocation

Automated, intelligent seat assignment based on batch schedules.

Real-time Occupancy

Live tracking and visualization of office space utilization.

Responsive Web Interface

Accessible anytime, anywhere, on any device.

Comprehensive Admin Control

Robust tools for employee, team, and system management.

Designed for Flexibility and Control

Smart Batch Scheduling

Alternating schedules (e.g., Mon-Wed week 1, Thu-Fri week 2) to ensure fair access.

Flexible Seating

Designated 40 seats for batch-based booking and 10 floater seats for additional flexibility.

Intelligent Booking Logic

Prioritized booking for designated days, with floater access for non-designated days after 3 PM.
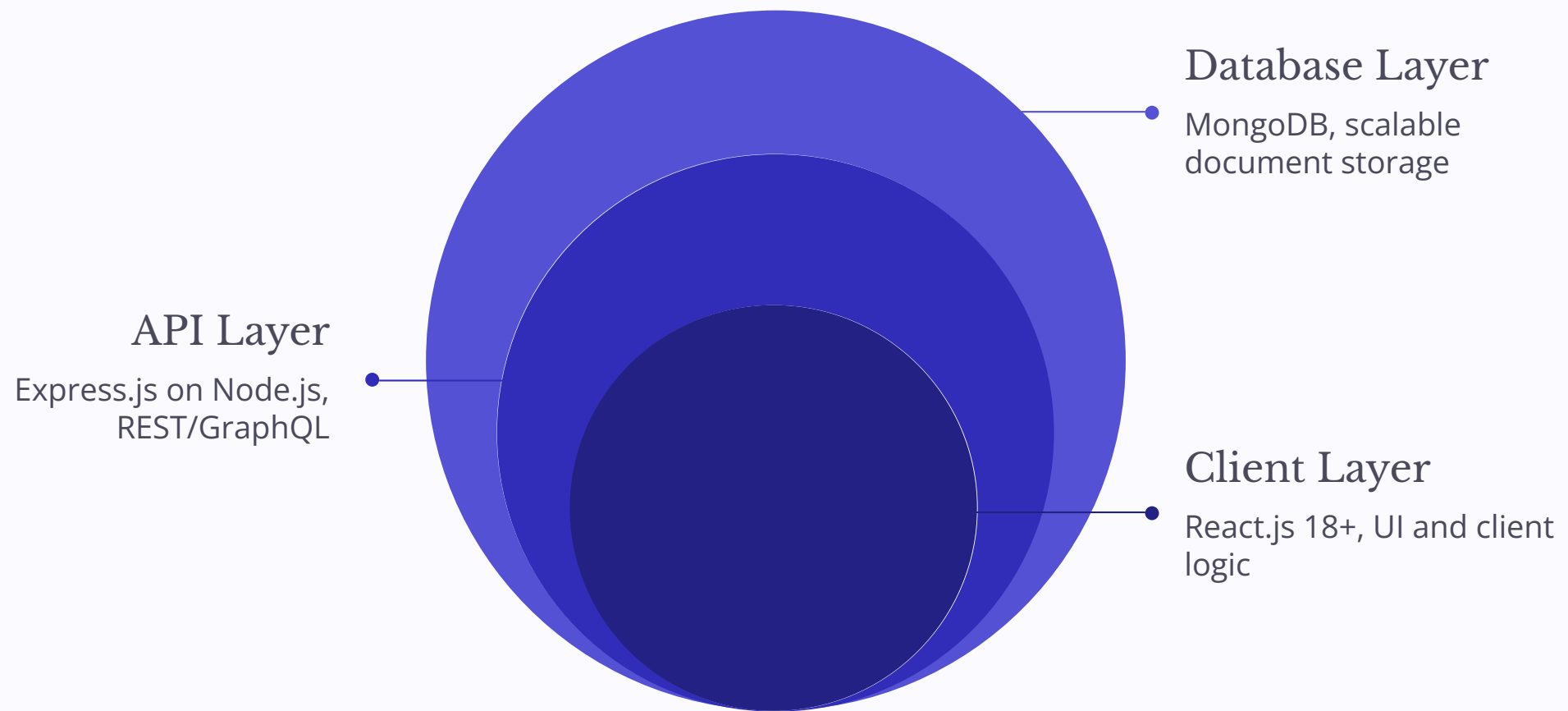
Real-time Dashboard

Live occupancy metrics, visual seat maps, and insightful statistics for optimal overview.

Admin Control Panel

Centralized management for employees, teams, and system configurations.

Robust and Scalable Architecture

Database Layer
MongoDB, scalable document storage

API Layer
Express.js on Node.js, REST/GraphQL

Client Layer
React.js 18+, UI and client logic

Our system is built on a modern, three-tier architecture ensuring reliability, performance, and scalability.

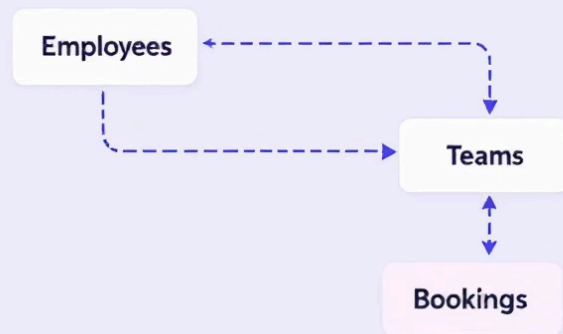| Client Layer	API Layer	Database Layer
React.js (18+)	Express.js (Node.js)	MongoDB

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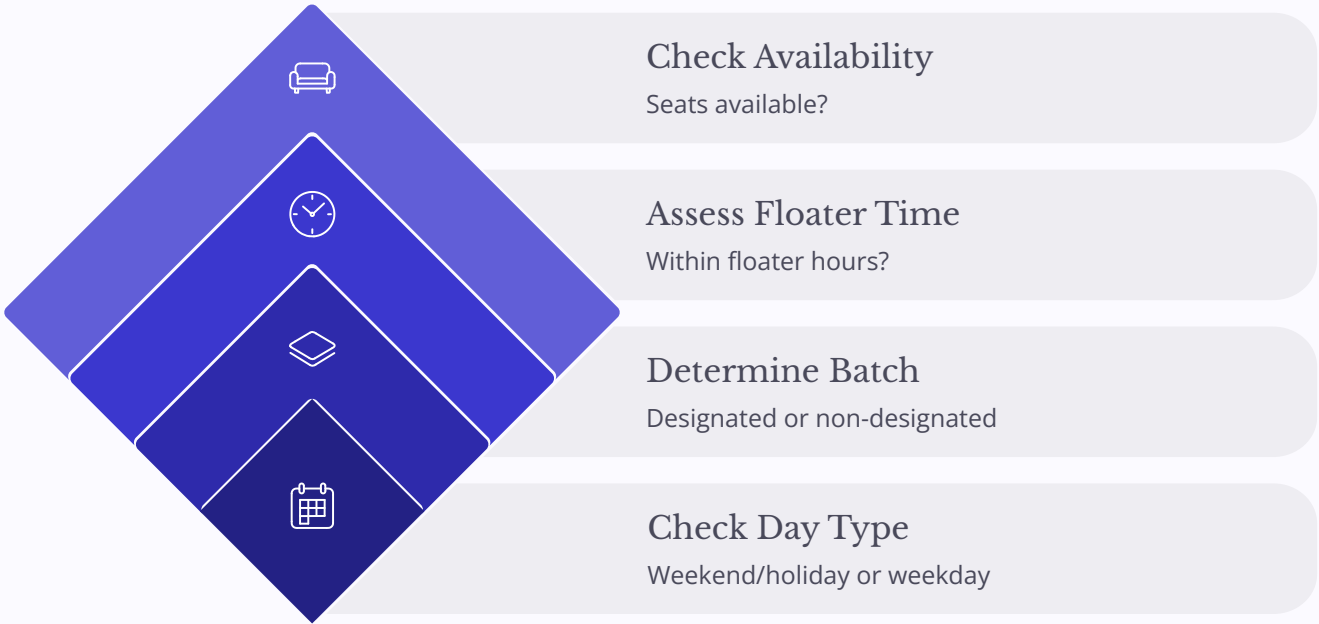
Structured Data Model for Efficiency

Our database is designed with distinct collections to manage employee information, team structures, seat availability, and booking records, ensuring clear relationships and data integrity.

Key Collections:

- **Employees:** Name, Email, Batch, Team
- **Teams:** Squad, Members
- **Seats:** Number, Type, Status
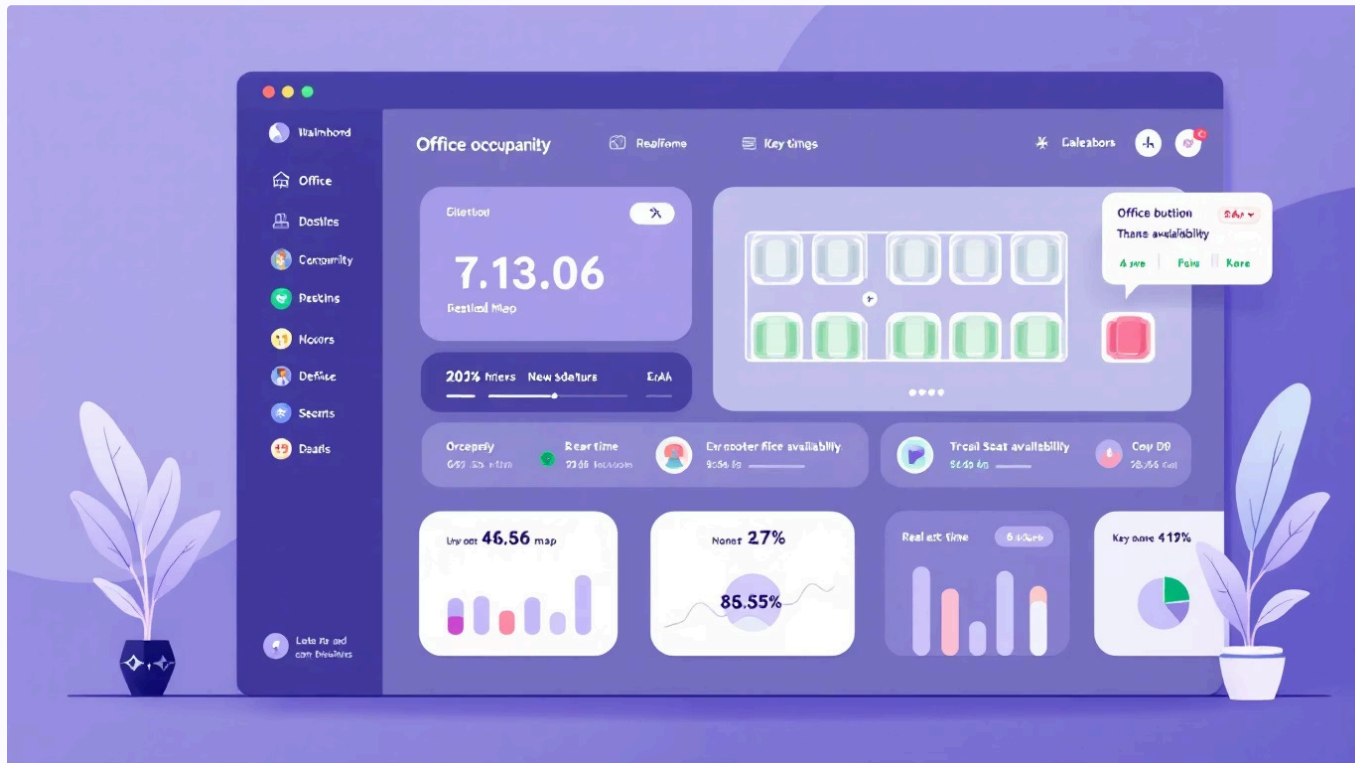- **Bookings:** Employee, Seat, Date, Time, Status

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Intelligent Booking Algorithm

Check Availability
Seats available?

Assess Floater Time
Within floater hours?

Determine Batch
Designated or non-designated

Check Day Type
Weekend/holiday or weekday

Booking Rules Matrix:

Day Type	Seats	Time	Notes
Designated	1-40	9AM-6PM	Full Access
Non-Designated	41-50	3PM-6PM	Floater Only
Weekend	None	—	Closed

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Dashboard: Real-time Office Overview

The dashboard provides an intuitive, real-time snapshot of office occupancy, enabling quick decision-making and optimal space management.
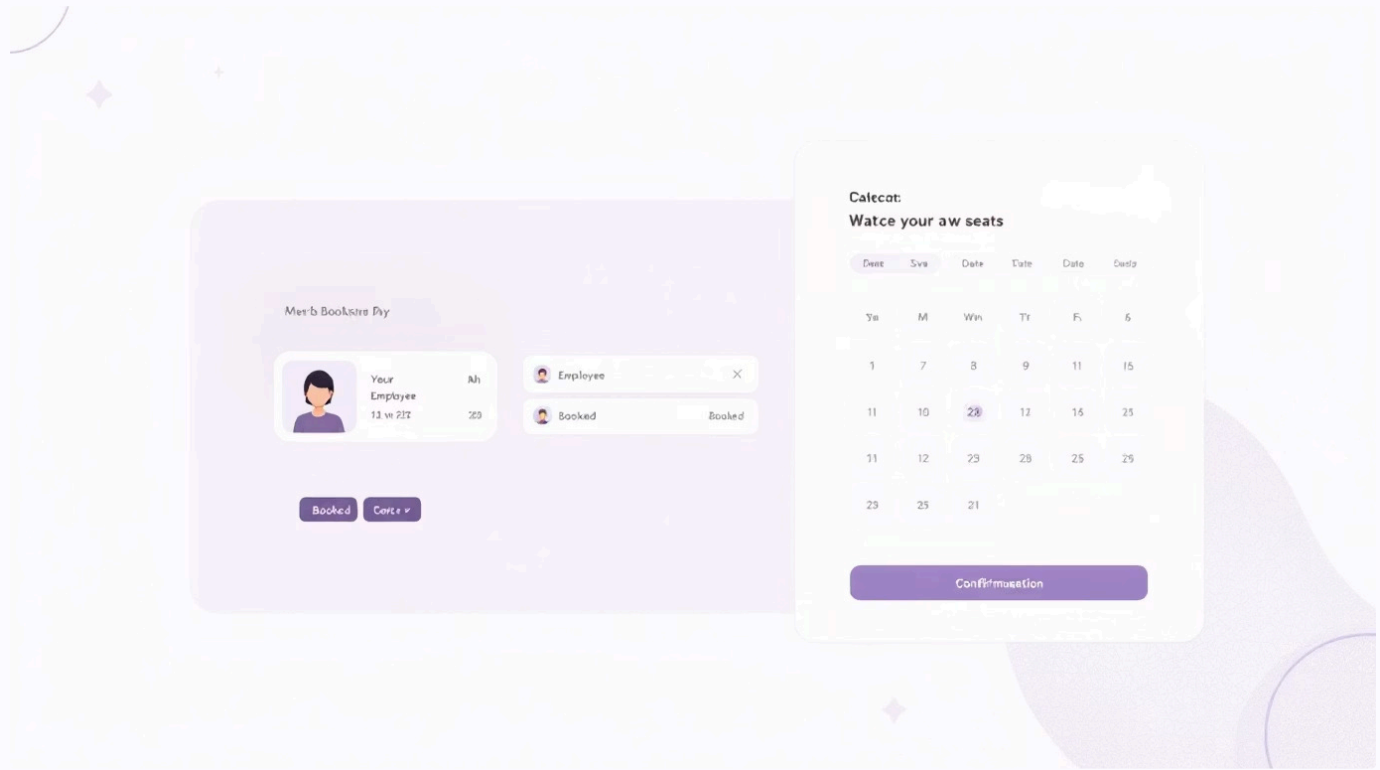
Key Dashboard Features:

- Live occupancy metrics (total, booked, available)
- Interactive, color-coded seat grid
- System information cards for quick stats
- Date selector for daily insights
- Responsive layout for all devices

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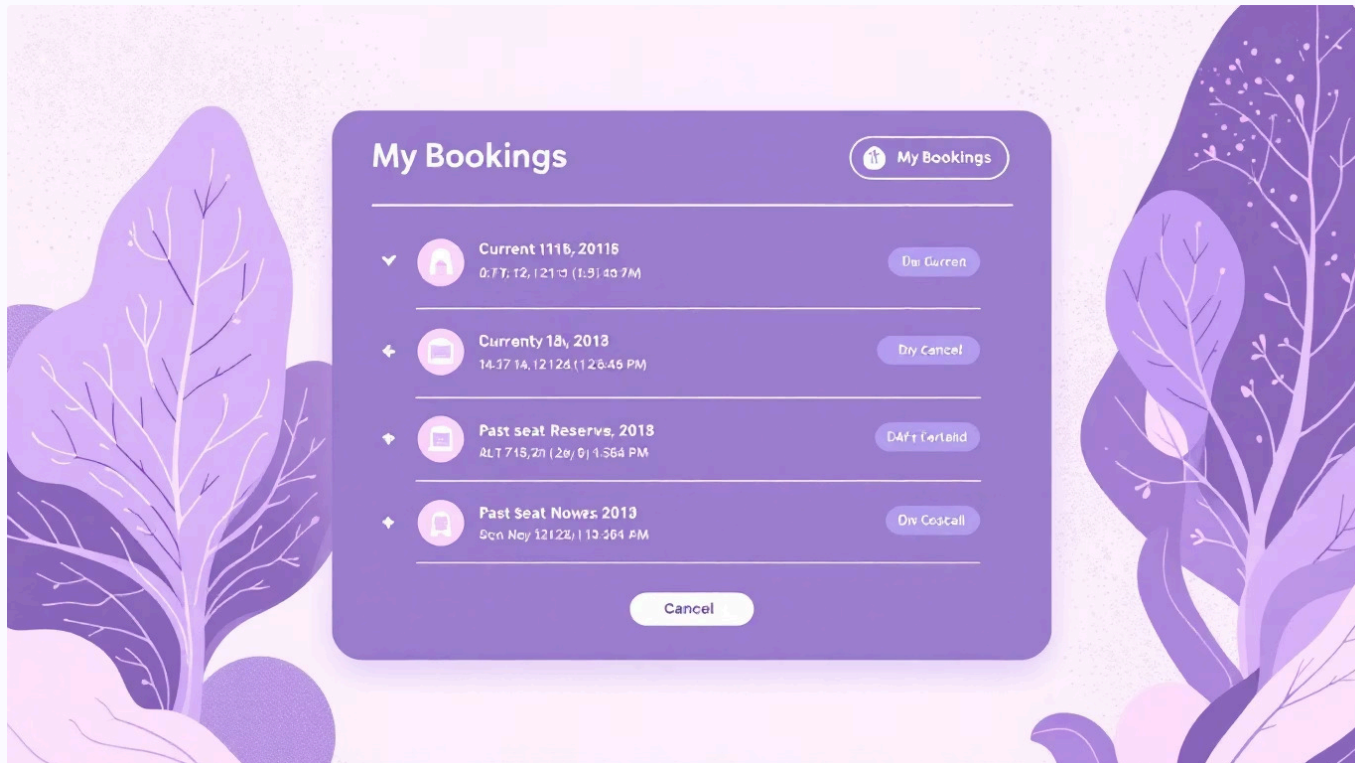# Booking Page: Seamless Seat Reservation

Intuitive UX for Booking

- Employee & date selectors

- Smart seat availability grid

- Real-time validation

- Clear guidelines and feedback

The booking interface simplifies the process of reserving a seat, guiding users with real-time feedback and clear rules.

My Bookings: Personal Management & History

Employees can easily view, manage, and track their past and upcoming seat reservations, offering transparency and control.

Features:

- Overview of active and historical bookings
- Detailed booking information
- One-click cancellation with instant updates
- Status indicators for clarity