Smart Hotel Booking & Management CRM System

# Project Overview

A next-generation, Salesforce-powered Smart Hotel Booking & Management CRM System that provides automated customer service, smart room availability predictions, AI-powered price recommendations, and seamless integrations with external platforms for a fully automated hotel experience.

# Smart Features Overview

* AI-powered Room Price Recommendation based on seasonality, occupancy trends, and competitor rates.
* Predictive Analytics for Room Availability: Predict peak times and suggest customers optimal booking times.
* Chatbot for Customer Queries: Automatically handle room availability, booking status, and FAQs.
* Smart Notifications: Automatically remind customers for upcoming check-in/check-out, special offers, payment due dates.
* Seamless Payment Integration with third-party payment gateways (Stripe/PayPal).
* External Booking Platform Sync: Real-time room availability sync with OTAs (Online Travel Agencies).

# Phase-wise Smart Implementation – Detailed Elaboration

## Phase 1: Problem Understanding & Industry Analysis

Problem Identified:  
Traditional hotel management practices are still heavily manual, leading to frequent errors in booking, low customer satisfaction, inefficient pricing, and poor decision-making.  
  
Smart Solution:  
Automating the entire hotel booking and management system using Salesforce combined with AI to provide predictive insights and automated workflows.  
  
AppExchange Research:  
Conducted in-depth research on existing automation and analytics apps available on Salesforce AppExchange. Analyzed gaps in current solutions such as lack of AI-driven price recommendation engines, poor integrations with OTAs, and limited customer self-service features.

## Phase 2: Org Setup & Configuration

Defined a clear multi-role organizational structure to manage system access:  
- Hotel Admin: Full access to manage room inventory, prices, customers, and reports.  
- Front Desk Staff: Handle bookings and customer interactions.  
- Customer Support Agents: Limited access, mainly for viewing bookings and assisting customers.  
  
Configured Permission Sets to control sensitive features (e.g., access to AI-based pricing adjustment).  
  
Used multiple Sandboxes for:  
- Development: Build custom objects, Apex classes, and flows.  
- Testing: Simulate real scenarios without affecting production data.

## Phase 3: Data Modeling & Relationships

Designed Custom Objects to store essential hotel-related data:  
- Room Inventory: Tracks room number, type, status (Available, Booked, Maintenance), base price, and AI-recommended price.  
- Smart Booking: Tracks customer, room booked, check-in/check-out dates, dynamic pricing applied, and booking status.  
- Customer: Stores customer profile, preferences, past booking history, and loyalty data.  
- Payment: Tracks amount paid, payment mode (Stripe/PayPal), and status (Paid/Pending).  
- Price History Log: Logs price adjustments over time for audit purposes.  
  
Implemented Predictive Price History Table to store all AI-generated pricing recommendations with timestamps, enabling historical comparison.

## Phase 4: Process Automation (Admin)

Built Smart Validation Rules to enforce business logic:  
- Prevent overlapping bookings.  
- Restrict invalid check-out dates (check-out must be after check-in).  
- Restrict invalid payment method combinations.  
  
Developed Process Builder + Flow Automation to:  
- Auto-assign rooms based on customer preferences (e.g., type of room, price range).  
- Trigger AI-powered price suggestions when occupancy crosses thresholds.  
- Automatically schedule and send check-in/check-out reminders via SMS/Email.  
  
Implemented Approval Process:  
- Large group bookings (>10 rooms) require managerial approval before confirmation.  
  
Designed Screen Flows:  
- Front desk booking wizard with step-by-step input forms that guide staff through the booking process with validations and dynamic field population.

## Phase 5: Apex Programming (Developer)

Developed modular Apex Classes:  
- Price Recommendation Engine: Communicates with external AI/ML APIs to calculate dynamic room pricing in real-time.  
- Booking Trigger Logic: Automatically updates room availability when a booking is inserted or updated.  
  
Implemented Batch Apex Jobs:  
- Analyze monthly occupancy trends to feed into predictive models.  
  
Created Queueable Apex Jobs:  
- Bulk update room price recommendations during low-traffic periods to optimize system performance.  
  
Applied Exception Handling:  
- Ensure system stability and avoid failures during peak loads (e.g., retry on external API failure).  
  
Built extensive Test Classes:  
- Focused on covering edge cases in price recommendation logic and booking creation.

## Phase 6: User Interface Development

Used Lightning App Builder to create a customized dashboard:  
- Intuitive Booking Wizard UI with interactive Calendar component for selecting available dates.  
  
Developed Lightning Web Components (LWC):  
- Real-time Price Recommendation display comparing AI-suggested price vs base price.  
- Visual Heatmap of Room Availability (color-coded: Available/Booked/Maintenance).  
- Booking History Table with dynamic filters.  
- Interactive graphs showing occupancy trends over time.  
  
Leveraged Apex & Wire Adapters to serve dynamic data in LWCs, improving page load speed and interactivity.

## Phase 7: Integration & External Access

Configured Named Credentials & OAuth Authentication for secure access to third-party services (e.g., Stripe for payments).  
  
Built REST API Integrations:  
- Synchronize room availability and booking status in real-time with OTAs (Booking.com, Expedia).  
- Enable seamless room inventory sync both ways to prevent overbooking.  
  
Implemented Platform Events:  
- Notify external systems in real-time when a new booking is created or updated.  
  
Exposed Custom REST Web Services:  
- Allow hotel website to consume booking data securely without exposing sensitive backend logic.

## Phase 8: Data Management & Deployment

Used Data Import Wizard & Data Loader:  
- Bulk import of room inventory, customer profiles, and past bookings during initial setup.  
  
Implemented Duplicate Rules:  
- Prevent multiple entries of the same customer or room number by matching email, phone number, or room identifiers.  
  
Managed Deployment Pipelines:  
- Used VS Code + Salesforce DX (SFDX) to version control code and deploy changes across environments (Dev → QA → Production).  
  
Scheduled Data Backups:  
- Automated daily data export jobs to prevent data loss.

## Phase 9: Reporting, Dashboards & Security Review

Built Smart Reports:  
- Predicted Peak Occupancy Report.  
- Revenue Forecast Report based on dynamic AI price recommendations.  
- Booking Source Report (Direct vs OTA).  
  
Designed Dynamic Dashboards:  
- Live room availability status.  
- Graph comparing historical vs AI-recommended pricing trends.  
- Custom KPI widgets for quick insights.  
  
Ensured Field-Level Security:  
- Sensitive fields (e.g., payment details, customer personal info) are hidden from lower-level roles.  
  
Enforced Session Management & Login IP Restrictions:  
- Security policies prevent unauthorized access.  
  
Enabled Audit Trail:  
- Logs of all key changes made to pricing, booking, and customer data for traceability.

## Phase 10: Final Presentation & Demo Day

Demo Flow Steps:  
1. Demonstrate full customer booking process with dynamic AI Price Recommendation.  
2. Show Calendar-based room availability view.  
3. Trigger Platform Event and confirm OTA sync in real time.  
4. Present Predictive Occupancy Report.  
5. Show seamless Stripe Payment integration flow.  
6. Showcase custom Dashboard Widgets with live graphs and KPIs.  
  
Delivered a complete Handoff Documentation Package including:  
- Architecture diagrams.  
- API endpoint definitions.  
- Automation Flow Diagrams (Process Builder + Flows).  
  
Example GitHub Repo URL:  
→ https://github.com/shaikyasmin057/Smart-Hotel-Booking-Management-CRM-System-using-Salesforce1/tree/main

Recorded Demo Video:  
End-to-end showcase: Booking → AI Pricing → Payment → Reports → OTA Sync.