**1. Introduction**

*This document compiles all current requirements for the AI hotel booking system, ensuring the final product meets the needs of end users, administrators, and external API partners.*

**2. Methodology**

* **2.1 Data Collection Techniques**

To gather requirements, the following techniques were employed:

* **Competitive Analysis:** Review and analysis of existing hotel booking platforms, with a focus on strengths and shortcomings in personalization and usability.
* **Observation:** Studying user behavior on current booking platforms and noting areas for improvement, particularly in search personalization.
* **2.2 Stakeholder Involvement**
* **End Users:** Travelers and hotel guests provided insights on ease of use, search filters, and the importance of recommendations personalized to travel history.
* **Admins & Customer Support:** Gave feedback on managing reservations, maintaining user data, and critical backend features needed to address booking and cancellation issues.
* **External Partners:** API providers (hotel data vendors) and third-party partners contributed expectations related to data integration, reliability, and update frequency.

**3. Collected Requirements**

* **3.1 Business Requirements**
* **Enhanced Market Competitiveness:**  
  Enable personalized hotel recommendations to boost customer satisfaction and increase conversion rates.
* **Revenue Maximization:**  
  Offer tailored hotel suggestions to enhance satisfaction and drive conversions.
* **3.2 User Requirements**
* **Intuitive Search Interface:**  
  Users need a clear home page with an easy search bar and advanced filters (location, dates, price, rating).
* **Personalized Recommendations:**  
  Users expect AI suggestions based on behavior and trends to quickly find suitable hotels.
* **Mobile Compatibility:**  
  The solution must be mobile-optimized for a consistent smartphone experience.
* **3.3 System Requirements**
* **Real-Time Data Integration:**  
  The system must integrate with hotel data APIs using a robust, cached interface for timely updates and performance.
* **High Security Standards:**  
  Encryption, multi-factor authentication, and GDPR compliance are mandatory.

**4. Analysis and Mapping**

* **4.1 Requirements Mapping**

Each requirement was categorized and later mapped to proposed system functionalities:

* **Search and Personalization:**  
  Mapped to the Home Page and AI-powered Search, offering dynamic recommendations based on user inputs.
* **User and Admin Dashboards:**  
  Directly align with seamless account management and efficient booking oversight.
* **API Integration and Data Security:**  
  These align with backend requirements, utilizing Laravel for real-time hotel data and security through robust API management.
* **4.2 Key Findings**
* Users prioritize fast, relevant search results, favoring a system that adapts with each interaction.
* Administrators need intuitive interfaces for user and booking management, with clear and powerful dashboards.
* Security and scalability are non-negotiable, shaping system architecture and technology choices.