

Airbnb System Architecture

I will share a famous system design of Airbnb.

First, you must understand what the functional and non-functional requirements are from the business nature. Airbnb is an online platform that connects individuals who want to rent out their houses to those who are looking for lodgings and rooms in a place for a short period.

Functional Requirements

1. Landlord

The hotel Manager from the platform will feed data to the system about the hotel and its availability and the customers who want to book the hotel room. The hotel manager here means that landlords want to rent out their rooms out for a short period.

- Able to register the hotel on the platform
- Add/update/delete room types in the Hotel
- Add/update/delete rooms of given room types
- Define the price and inventory of room types on a daily basis

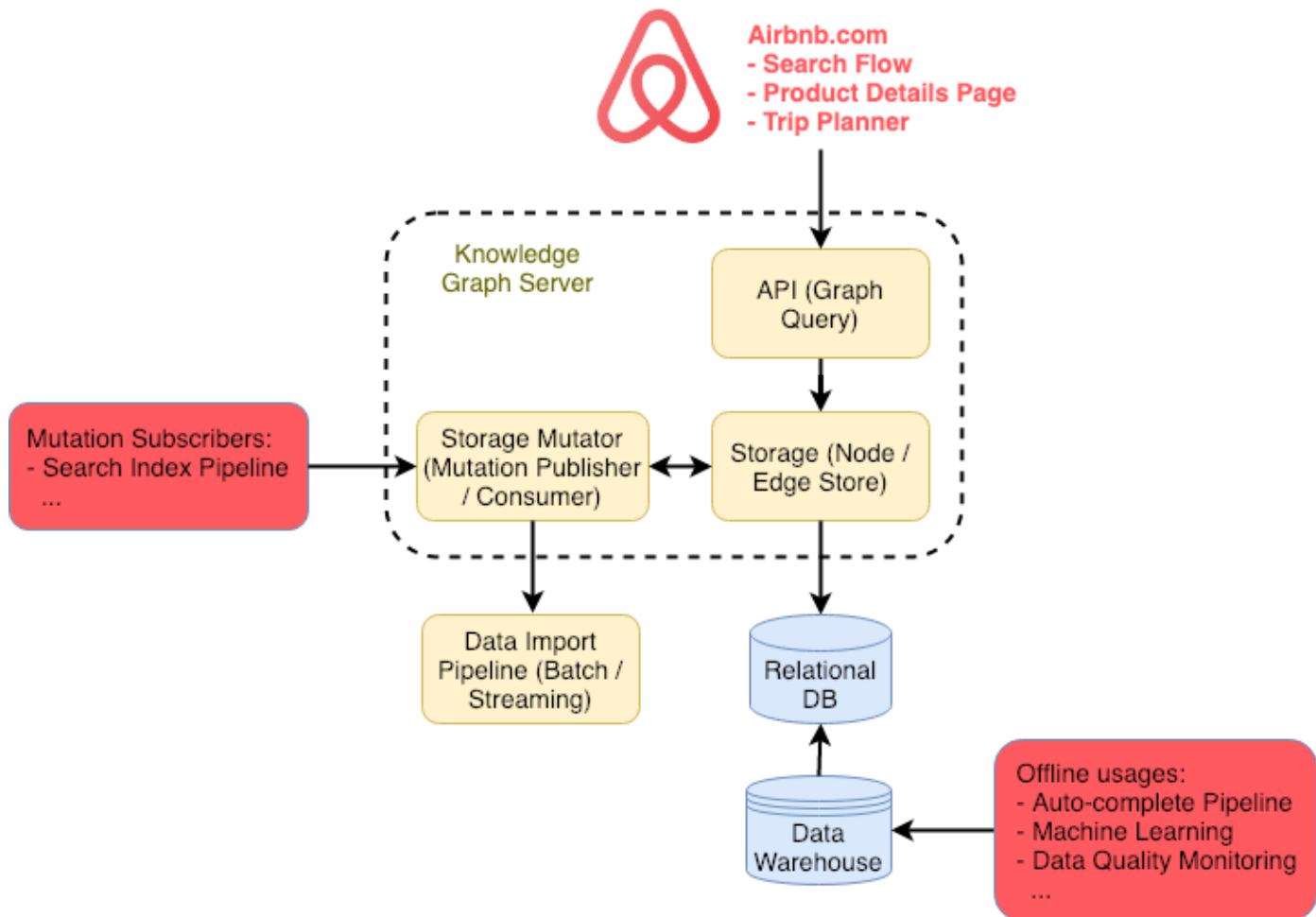
2. User/ Customer

1. Able to search available hotels by city, check-in, check-out date
2. able to select a hotel and see all the available hotel types and their prices
3. Able to select the desired room type and proceed with the booking
4. Receive the notification about the booking details once the booking is completed

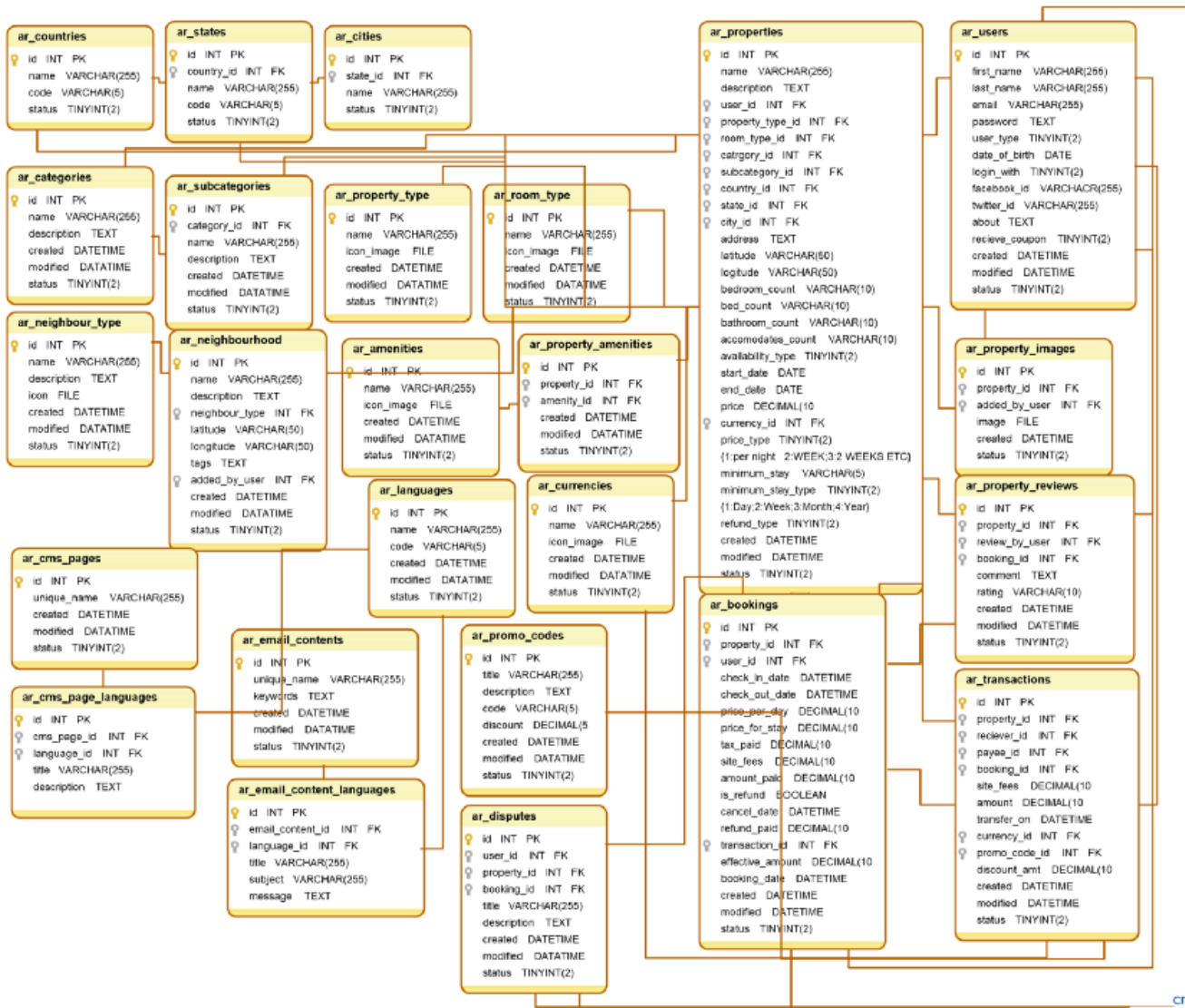
Non Functional Requirement

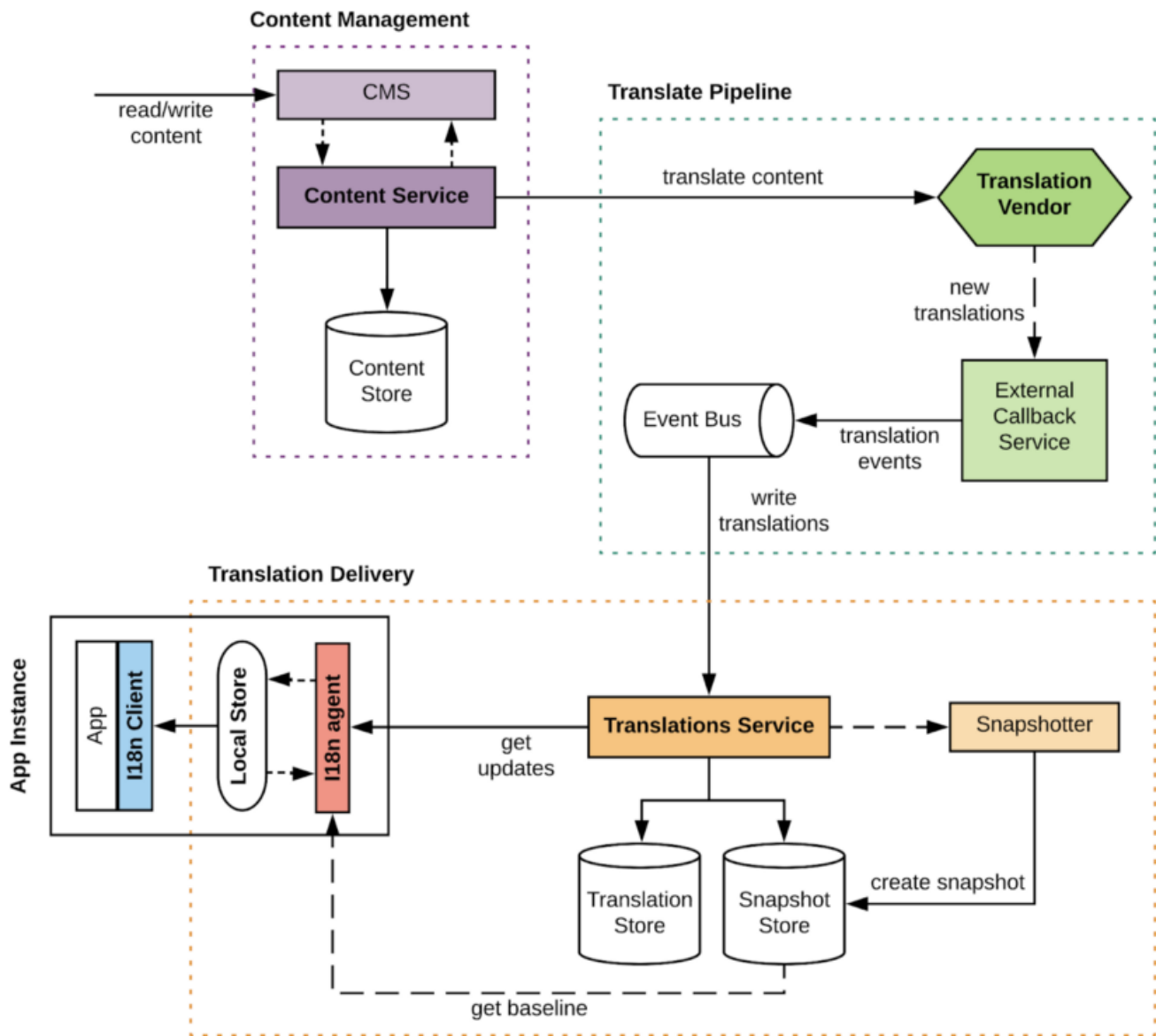
1. System handling operations related to hotel managers and booking flows must be highly consistent
2. Discovery platform showing hotels to the customers should be highly available
3. The system should have low latency
4. The system should be highly scalable to handle the increasing number of hotels and the number of new incoming customers
5. The system should be able to handle concurrent requests such that no two customers should be able to book the same room on a particular day

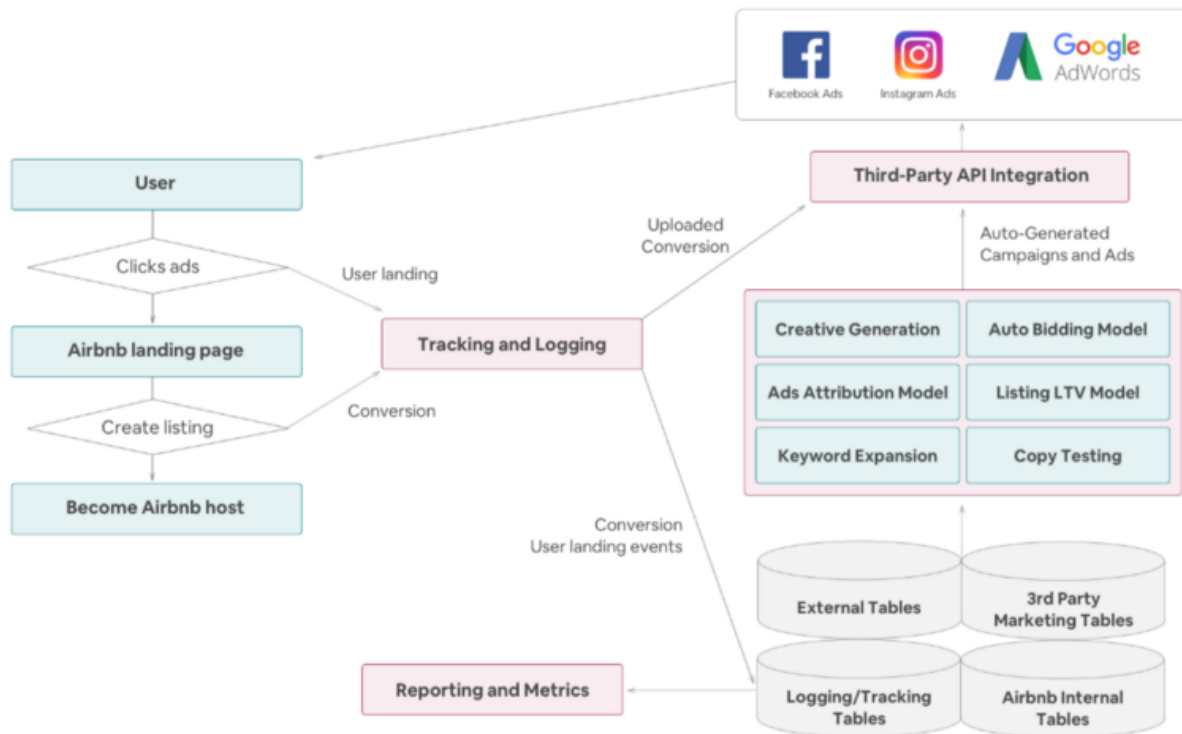
We can prepare a high-level diagrams and DB schema or Entity Design.



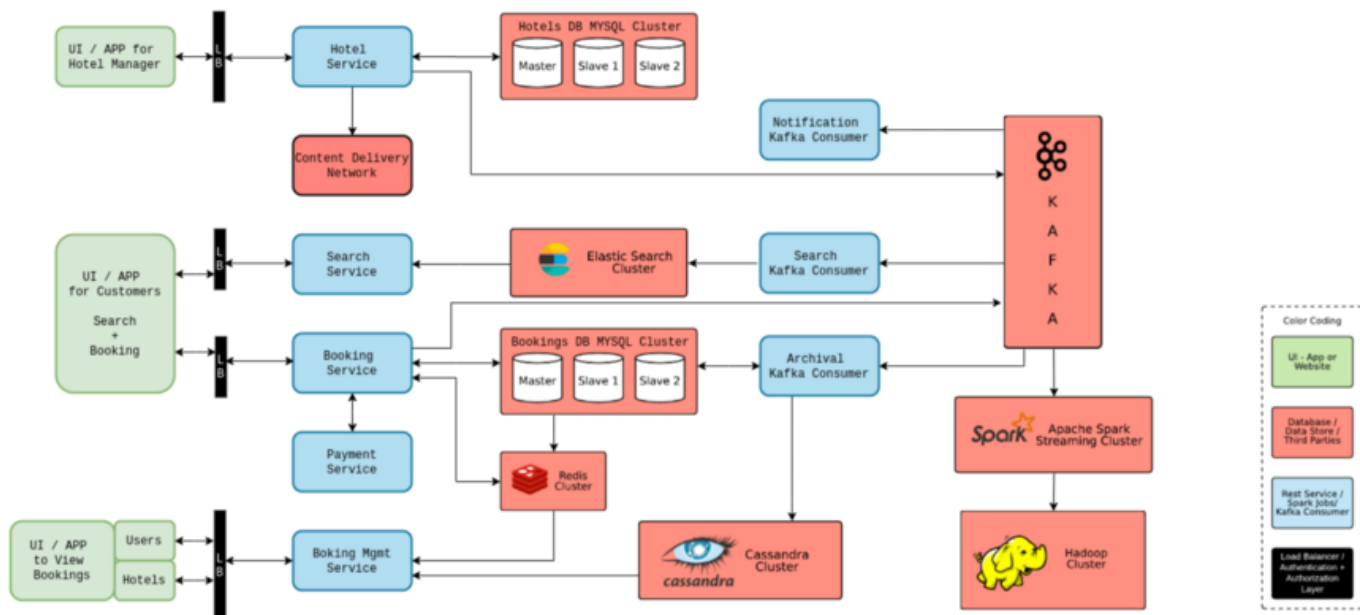
Database Schema - AIRBNB

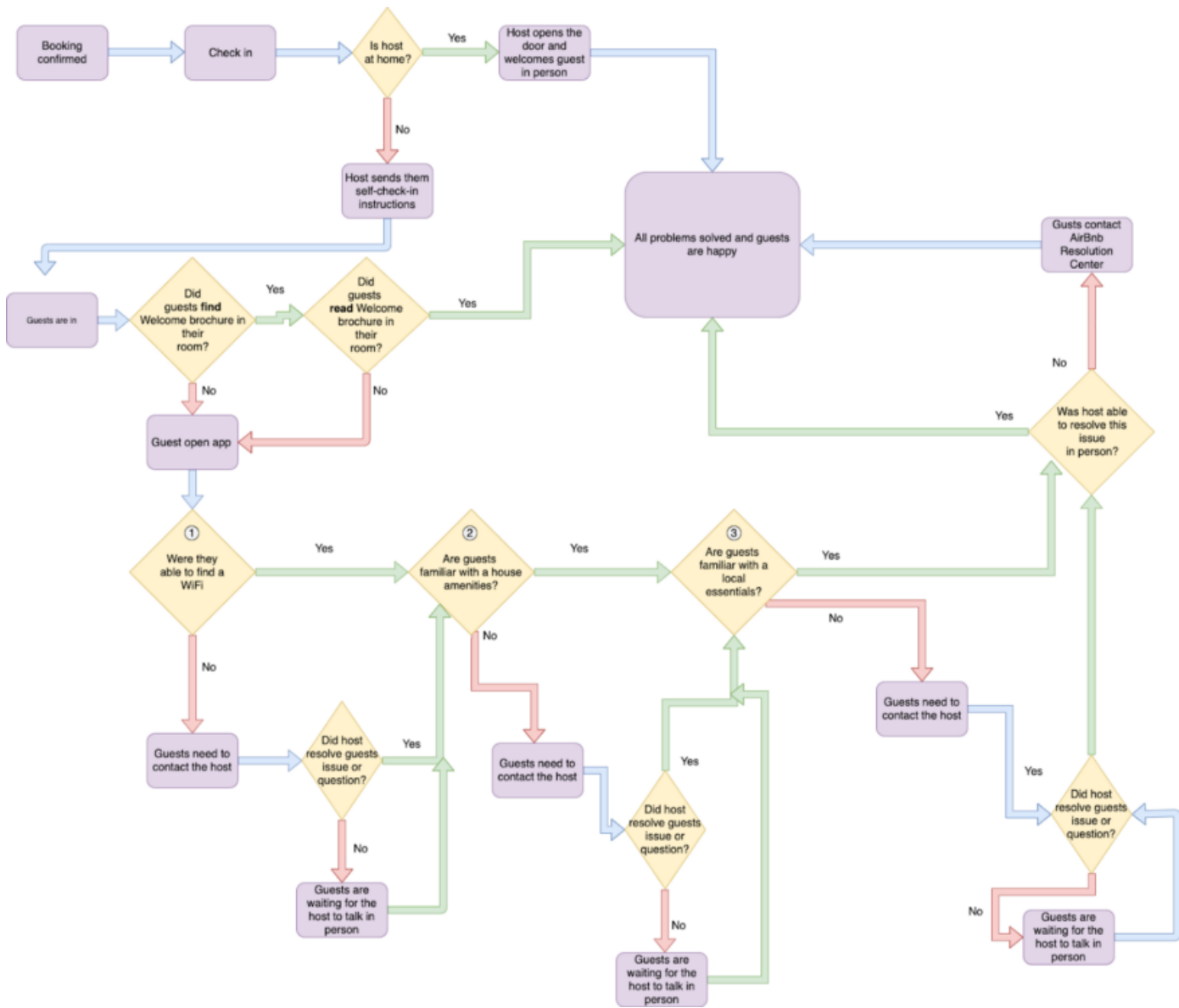


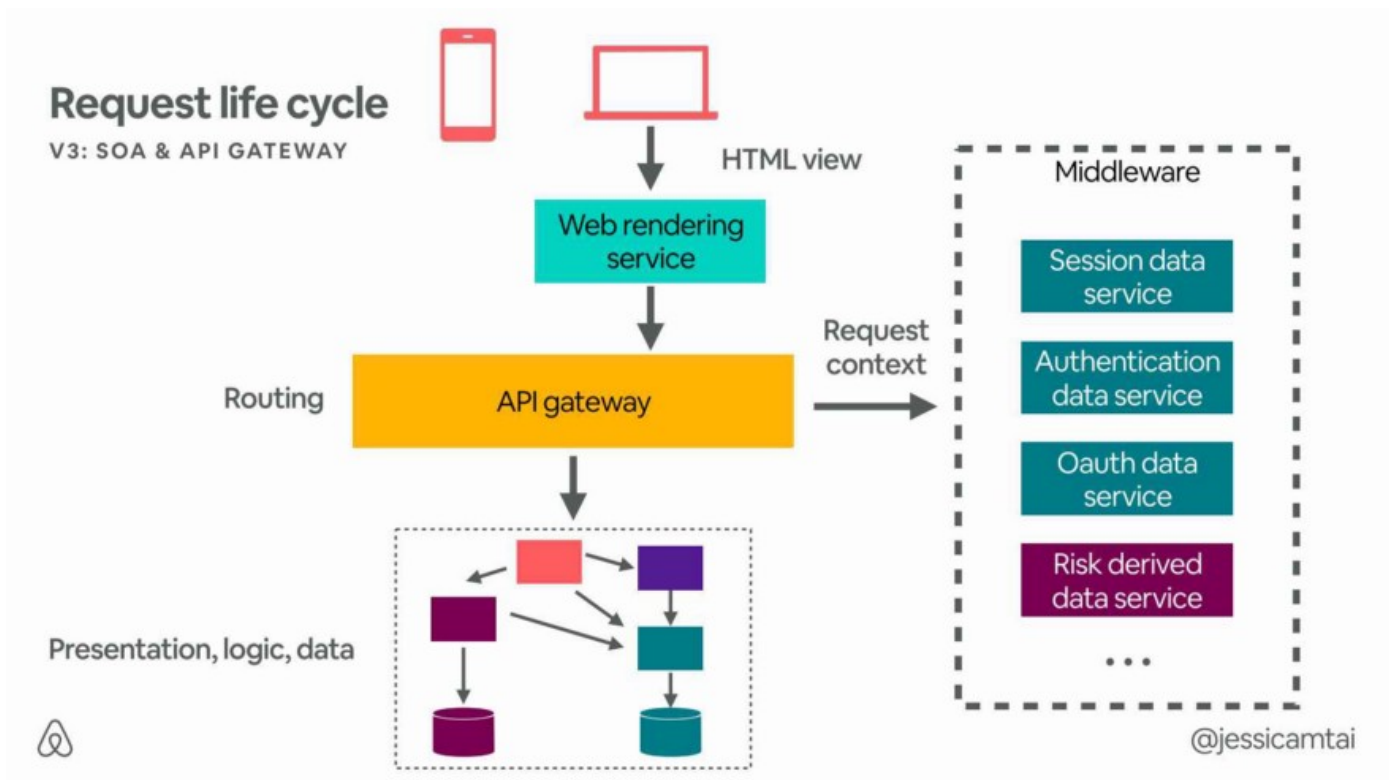




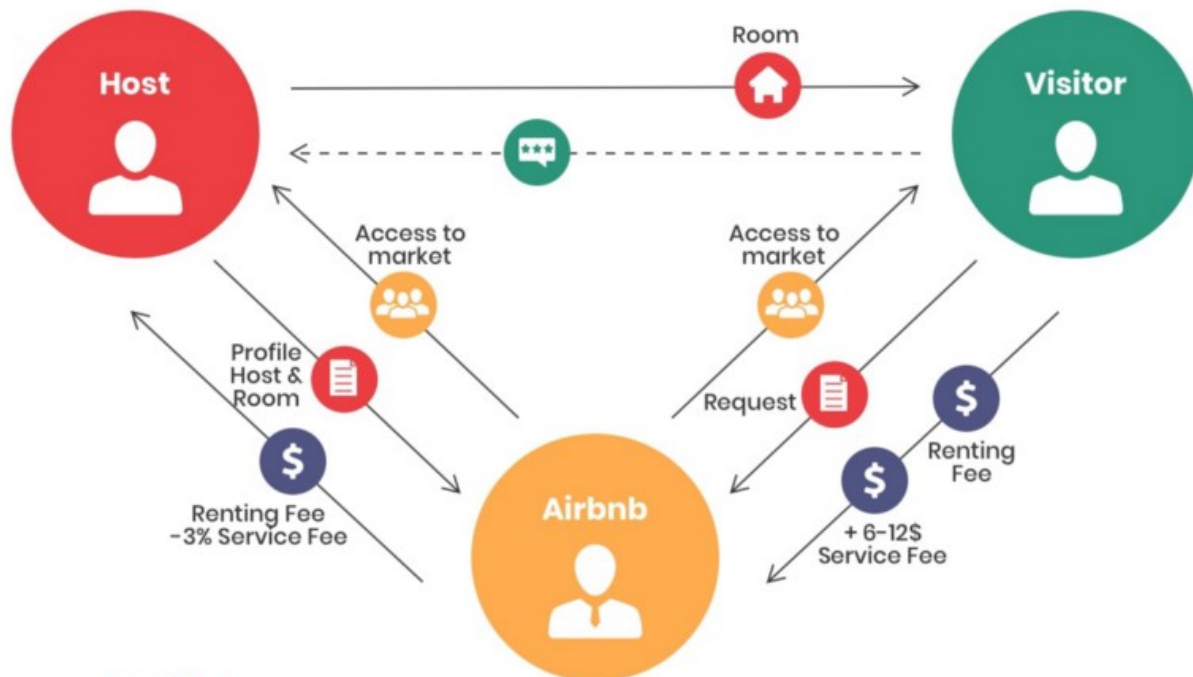
Airbnb/Booking.com System Design





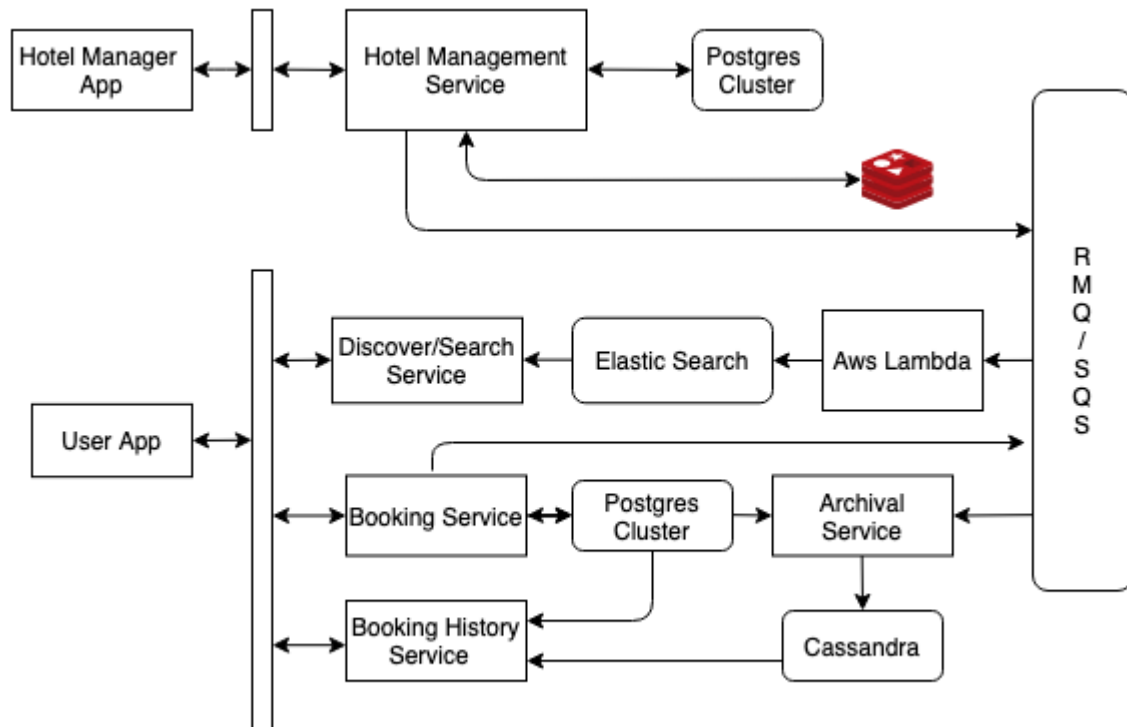


Airbnb monetization structure



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1. Register hotel
POST /hotel/register
2. Add room type in a hotel
POST /hotel/{hotel_id}/room-type
3. Add Room In Hotel
POST /hotel/{hotel_id}/room-type/{room_type_id}/room
4. Return the list of nearby hotels
GET /hotels/location/{location_id}
5. Given a hotel return it's detail
GET /hotel/{hotel_id}
6. Book a hotel room
POST /booking
7. Return the bookings for a user
GET /user/{user_id}/bookings
8. Returns the bookings for a hotel
GET /hotel/{hotel_id}/bookings
9. Check-In to hotel
PUT /booking/{booking_id}/check-in
10. Check-Out from hotel
PUT /booking/{booking_id}/check-out

APIs 1,2,3 will be part of the **Hotel Management Service**.

APIs 4,5 will be part of **Discover Platform**.

APIs 6,9,10 will be part of the **Booking Service**.

APIs 7,8 will be part of the **Booking History Service**.

Hotel Manager API

- The hotel manager will manage details about the hotel, room types, prices.
- The hotel manager will publish the details and update the system for the availability of the hotels and those will send an event to Async Queue which will then be consumed by AWS lambda function for search purpose.
- User/customers can search for hotels and select the preferred room type.
- Users can check his or her own history of booking through this account.

You can understand more by reading the Airbnb designer blog