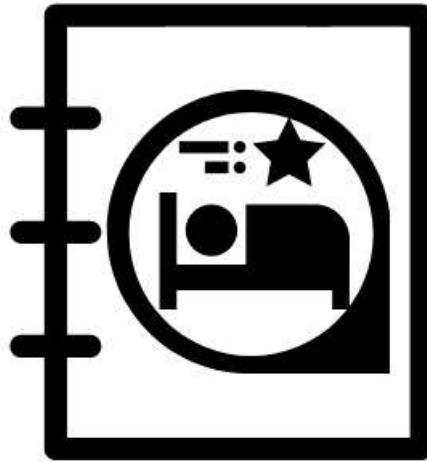


California State University Fullerton

CPSC 462



Object Oriented Software Design Vision and Business Case for the



Hotel Reservation System

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Revision History:

Version	Date	Summary of Changes	Author
1.0	2021-10-18	<ul style="list-style-type: none"> Initial Release 	Josh Ibad
2.0	2021-11-15	<ul style="list-style-type: none"> Changed role to Chief Software Architect Executive Summary elaborated further. Context diagram - Added external system 'Offline Payment Service' Iteration schedule elaborated into UP iterations and phases. Go/No-Go Decision - Provided explicit GO decision along with elaboration on rationale as to how opportunities outweigh risks. 	Josh Ibad

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1 Executive Summary

We envision a centralized reservation system (CRS), Hotel Reservation System, with the flexibility to allow hotels to manage their own hotels, and the affordability to support hotels of all sizes. The system will combine the features of internal reservation systems and external booking systems while providing sufficient customizability and configurability to allow hotels to control and expand their business seamlessly independent of the management of the software provider.

The problem of expensive and non-scalable hotel reservation systems provide the business opportunity of creating a hotel reservation system that scales well to hotels of smaller sizes and that is affordable to smaller hotels. Despite competitors doing very well, the Hotel Reservation System remains a viable option as it is cheaper than the alternatives and will be easier to maintain, being an in-house system than a managed one that requires oversight by third parties.

The target demographic of the Hotel Reservation system are smaller hotels that do not find large scale CRS softwares beneficial compared to their costs and must scale well, however the system is also intended to work for large scale hotels. The primary non-user stakeholders are Hotel CEO's who want to improve business manageability and operability and Hotel Private Equity Investor's who want to maximize profit and improve revenue. The primary user stakeholders and thus actors, are Hotel Manager who want to improve the convenience of hotel management tasks, Hotel Clerk who wants to improve the convenience of handling the guest's accommodations, and Guest who wants transparency in their reservation options and to be able to conveniently reserve a room.

The system will have the same three user stakeholders acting as Actors to call upon the services of the Hotel Reservation System. The Hotel Reservation system will call upon the services of a single external system -- an Online Payment Service. The key features of the system will be as follows:

- Configurable hotel room listings, descriptions, and pricing models.
- Track room availability or occupancy, guest checkins & checkouts, and additional guest transactions
- Provide reservation capabilities for guests from the convenience of their own client devices.

The benefits of implementing this system far outweigh the risks, thus we should move forward with the development of this project

2 Positioning

2.1 Business Opportunity

Existing hotel reservation systems are often expensive with a pricing system that is not proportional to income, nor entirely reasonable in scaling. In addition, most existing hotel reservation systems keep the management and configuration to the software providers, forcing the hotel to rely on their IT staff to manage information even though hotel staff could do this best. There is a demand for a hotel reservation system that can be managed by the hotel directly while remaining affordable.

2.2 Problem Statement

Existing hotel reservation systems are often expensive, with complicated setups that are managed by the software provider, despite the fact that hotel management knows their own hotels best. This means that hotel staff must go through the software provider's IT team or portal before any changes can be made, instead of being able to do so themselves to remain flexible in the competitive field of the hospitality industry. Also, they often charge based on a per room per month model. This means that small hotels suffer from costly setup prices despite a simple setup for a small hotel, while large hotels with many branches suffer from the surmounting costs from many hotel rooms.

2.3 Product Position Statement

The Hotel Reservation System is a system for the staff in the hospitality industry, to manage their own reservation system with the flexibility to interface with a public-facing booking service. The Hotel Reservation System will also be affordable enough for small hotels and scalable enough for large hotels, using a pricing model based on commission rates, which are directly proportional to hotel revenue. This means that costs only accrue when business is booming.

2.4 Alternates and Competition

Pegasus CRS offers full control of hotel management as this product does, however it is bound to be costly, offering too many features that only large hotels would have a business need for. Veritcal Booking CRS is a reservation management system that offers limited customizability that still requires high dependence on the software provider. It also is bound to be costly with too many features that a smaller hotel would not need to pay for.

3 Stakeholder Descriptions

3.1 Market Demographics

The Hotel Reservation System is aimed at being marketed to businesses all throughout the hospitality industry. Though flexible to be used at hotels, motels, and inns of various sizes, the main target demographic are hotels that are on the smaller size, as these hotels will often find CRS costs to be costlier relative to their revenue than would larger hotels.

3.2 Non-User Summary

3.2.1 Hotel CEO

The Hotel CEO wants his hotel to become more managable to improve business operability and to minimize risk from human error. In terms of a system, the CEO wants his managers and staff to be able to run the hotel better through a centralized digital solution.

3.2.2 Hotel's Private Equity Investor

The Hotel's Private Equity Investor wants an increase in revenue from an increase in reservations made. In terms of a system, the investor wants an expansion towards marketing to potential guests over the internet and to allow them to make reservations.

3.3 User Summary

3.3.1 Hotel Manager

The Hotel Manager wants an easier way to manage the hotel. In terms of a potential system, Hotel Manager wants to be able to control the details used by the system. The Hotel Manager also wants control over what customers see when they reserve a room so as to be able to increase marketability through great presentation of hotel features.

3.3.2 Hotel Clerk

The Hotel Clerk wants to handle guest accommodations easier. In terms of a system, Hotel Clerk wants to be able to check in and check out guests, as well as to add surcharges from items or services ordered by accommodated guests. The Hotel Clerk would also like to see what rooms are occupied or already reserved in the future to prevent giving away reserved/occupied rooms to walk-in guests.

3.3.3 Hotel Guests

The Hotel Guest (or simply, Guest), wants to reserve a room at the hotel. In terms of a system, the Guest wants to see what rooms are available for their time of stay and what features a room has before being able to reserve it.

3.4 Key High-Level Goals and Problems of Stakeholders

Stakeholder	High-Level Goal	Priority	Issues / Problems	Interests / Solutions
Hotel CEO	Hotel system manageability and business operability	High	It is difficult for staff to operate a hotel and keep track of transactions and accommodations manually.	Centralized digital solution must help organize data to make business operations become manageable.
Hotel's Private Equity Investor	Increase in visitors and revenue	High	There is no way for visitors to reserve rooms without a calling.	Digital solution must have a web interface to market to guests and improve reservation rate.
Hotel Manager	Convenient hotel management process	Medium	Has to keep track of all rooms and services along with pricing models that must remain competitive.	Solution must keep a modifiable list of room and room features. Set price must be easy to change.
Hotel Clerk	Improvement in handling guest accommodations	Medium	Has to keep track of availability across all rooms, check in and checkout of guests, and additional transactions incurred by guests.	Solution must record room availability & room occupancy, and keep track of transactions incurred by guests.
Hotel Guests	Accessible and easy-to-use reservation process	Medium	Has to reserve and pay for the right room prior to hotel visit.	Digital solution must have a web interface for guests to reserve rooms at.

3.5 User-level Goals

Hotel Manager wants to manage hotel room listings.

Hotel Clerk wants to manage guest accommodations.

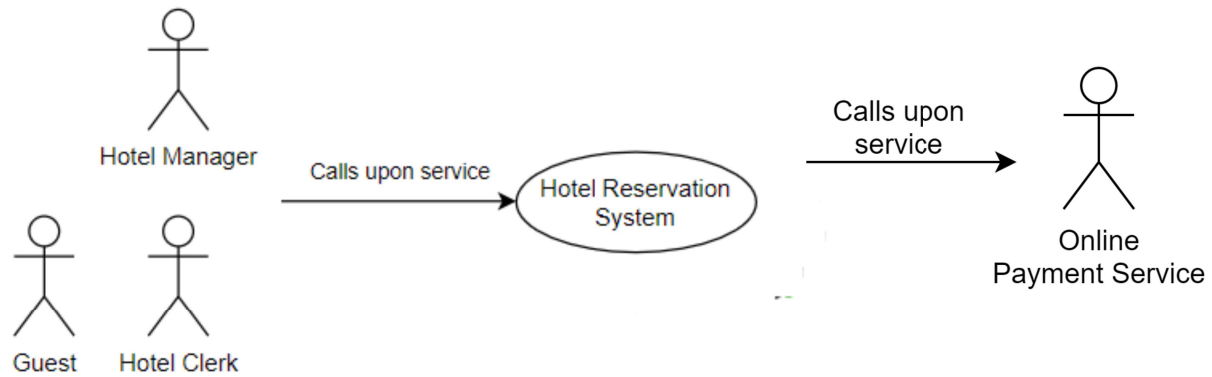
Guest wants to manage reservations.

4 Product Overview

4.1 Product Perspective

The Hotel Reservation System will be a centralized digital solution ran in the cloud. Internal hotel devices can be used for management of hotel room listings and guest accomodations, while external guest devices can be used to manage reservations.

4.2 System Context Diagram



5 Summary of Benefits

Supporting Feature	Stakeholder Benefit
The system will provide a secure, centralized interface from which hotel room listings and room descriptions can be managed, allowing easy changes to marketing tactics and pricing models.	Hotel marketing and pricing models are flexible to be adaptable to changing market conditions and competition. Supports physical hotel building expansions or opening of new branches with minimal overhead.
The system will provide centralized process from which room availability and occupancy can be tracked, along with guest checkin and checkout, and any additional services or goods purchased by guests during their stay.	Hotel operations become greatly manageable and scalable to be able to handle large-scale business. Human error is minimized within business operations.
The system will provide a public-facing web interface from which guests can reserve rooms conveniently from their client devices over the internet.	Potential increase in reservation rate from ease of reservation. Guests can conveniently reserve rooms without a lengthy conversation or physically entering the hotel.

6 Summary of System Features

- Configurable hotel room listings, descriptions, and pricing models.
- Track room availability or occupancy, guest checkins & checkouts, and additional guest transactions
- Provide reservation capabilities for guests from the convenience of their own client devices.

7 Investment Summary

7.1 Cost Summary

The Hotel Reservation System can be hosted as either a cloud service or a dedicated in-house server. The cheaper and scalable option is a cloud service, which will cost \$120 per node and around \$4 per GB storage per month. A single node would be 8 CPU's and 16 GB dedicated server hosted on Linode. Node count would increase when hourly usage rates increase to levels that begin causing slowdowns in service.

Development will cost around \$20k for the first iteration, with growing costs if a larger development team is desired. The first iteration will be sufficient for a minimum viable capable of generating revenue, however it will take up to two more iterations (financial quarters) for the system to be developed into a more formidable and competitive version that can gain the business of larger hotels.

7.2 Pricing Summary

The Hotel Reservation System's services can be provided under a commission pricing model close. A reasonable pricing depending on room count and average room price would range towards a 2.5% commission rate. If other services can be provided, an enterprise version can also be sold for larger hotels under a higher commission rate around 5%.

7.3 Schedule Summary

7.3.1 Iteration Plan

High-level schedule showing milestones and proposed features for each iteration for the entire project

Timeline (dates)	Phase / Iteration	Features & Use Cases Provided	Constraints / Dependencies	Degree of Freedom / Alternatives
2021-11-15	E1	Manage Hotel Listing, Manage Reservations Basic architecture set up	Manage Hotel Listings must work to work on Manage Reservations	Strict
2021-12-06	E2	Manage Hotel Listing, Manage Reservations Software design patterns began and architecture elaborated	Manage Hotel Listings must work to work on Manage Reservations	Reservations is interchangeable with Guest Accomodations
2022-01-15	C1	Manage Guest Accomodations, Manage Hotel Listing, Manage Reservations Begin finalizing architecture and design pattern.	Manage Hotel Listings must work to work on Manage Reservations	Strict
2022-02-06	C2	Manage Guest Accomodations, Manage Hotel Listing, Manage Reservations Resilient error handling incorporated to system	Manage Hotel Listings must work to work on Manage Reservations. Architecture and design patterns must be finalized to build upon.	If not yet finalized, then architecture and design patterns should be finalized here instead of error handling.
2022-03-15	T1	Deploy system, Configure system for employee usage, Employee training	System must be completed.	Strict. If constraints and dependencies not met, then postpone Transition phase and continue Construction.

8 Assumptions and Dependencies

The system is dependent on e-commerce transaction capabilities. It is also assumes that infrastructure will be in place on which to run the system, be it a in-house network of servers or a paid cloud service managed by a third party.

9 Go / No-Go Decision

GO - The Hotel Reservation System is a good idea and is worth investing in, as the potential opportunities far outweigh the risks. With the given available resources and schedule, we should be able to get a minimum viable product produced in a hasty manner to a point that the system will begin aiding hotel operations become more efficient and reduce operational risk. The system should also be able to allow hotels to provide a public-facing guest reservation system in time to produce an increase in revenue that will well make up for investment. Thus, the opportunities provided by the potential increase in revenue should outweigh the risks of production.